

AD&A



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Effects Through Acquisition

Leveraging
the Power
of Contingency
Contracting

2011 Defense
Acquisition
Workforce Awards

Acquisition Program
Management
Challenges in Afghanistan
Part 2: Afghan Vendor
Base

The Drag Efficient:
The Missing
Quantification of Time
on the Critical Path

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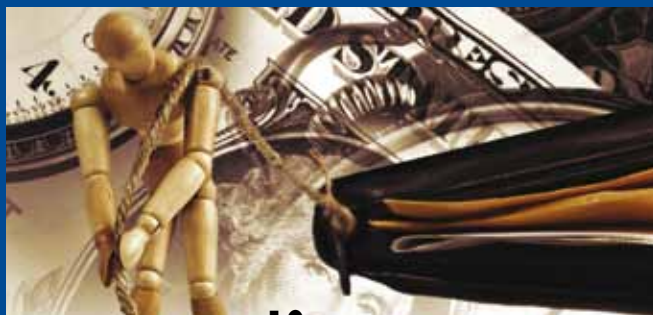


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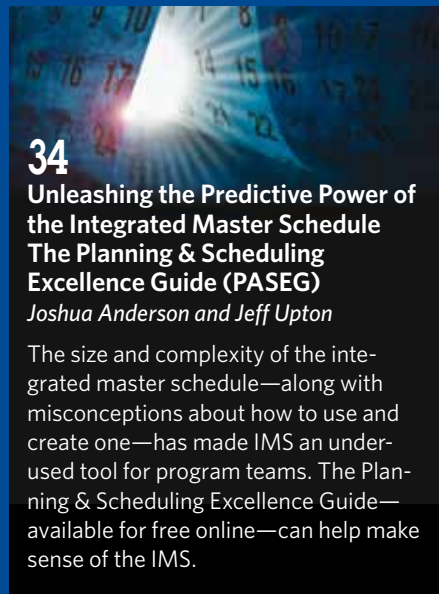


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Effects Through Acquisition

Leveraging the Power of
Contingency Contracting

Andrew S. Haeuptle ■ Renanah Miles

The scale of our contracting
efforts in Afghanistan represents
both an opportunity and a danger.

— **Gen. David H. Petraeus, USA (Ret.), former commander,
U.S. forces in Afghanistan/International
Security Assistance Force,
Afghanistan**



Contingency contracting is a potent force available to commanders in Afghanistan. Acquisition efforts support the counterinsurgency (COIN) mission, using business and economic operations as a stabilization tool to bolster local development. Conversely, wasted or misused dollars can hinder long-term stabilization, fund the enemy, and fuel corruption. In fiscal year (FY) 2009, NATO and U.S. Forces-Afghanistan (USFOR-A) contracted for services and goods totaling approximately \$14 billion—roughly equal to Afghanistan’s GDP for the same year. This year, estimates are that combined contracting activities may exceed Afghanistan’s GDP.

Given the scale of International Security Assistance Force (ISAF) contracting, the opportunities—and risks—are significant. Despite the stakes, there is still much to do to strategically leverage our economic power via contracting.

Hauptle is director of expeditionary business operations in the Office of the Deputy Chief Management Officer. He previously served as deputy director of the Task Force for Business and Stability Operations-Iraq at OSD. **Miles** is a program analyst for expeditionary business operations, Office of the Deputy Chief Management Officer.

Integrated processes drive every kinetic operation in a counterinsurgency environment, and equivalent effort is needed on the acquisition side. Unified standards and a streamlined approach to contingency contracting are needed; today, more than 70 disparate offices are involved in the process. We must have unity of effort, and we must find a means to translate strategy into joint execution. After nearly 10 years of operations in Afghanistan, we have not achieved this model; how can we do so?

The solution is to designate and empower a lead that is chartered to integrate efforts across the acquisition continuum, enabling synchronized effects in support of the COIN strategy. This lead must reach across the continuum in an end-to-end approach that establishes joint controls and helps ensure that business operations are integrated into the theater campaign plan and managed for maximum effect. The result will be an approach to contracting that achieves visibility and transparency of funds, spurs local development, and creates jobs while minimizing corruption.



These activities can galvanize and promote industries with immediate and long-term potential, such as agriculture and construction, which build upon each other to facilitate growth.

Opportunities and the Imperative to Action

The military contracting effort has two unique characteristics that enable it to function as a force multiplier and economic development tool. First is the inherent scale of the services and goods required to sustain the military effort. In this sense, contract dollars may function as a weapon system—enabling the operational mission and achieving critical non-kinetic effects on the battlefield. Second is the military's unique ability to operate effectively in initial post- or intra-conflict environments that can be a barrier to other governmental and non-governmental entities. This ability to execute the mission in spite of the environment provides an opportunity to spur immediate and long-term economic development, as well as activities that overlap both phases. Given this context, it is beneficial to create a strategy to build local Afghan capacity while doing the groundwork for long-term, sustainable economic development involving the local and international business communities and investment.

To support U.S. forces in Afghanistan this year, contracting officers will oversee more than 35,000 contracts for materiel, goods, and services. Thirteen regional contracting centers across the area of responsibility represent capacity-building opportunities in diverse regions across Afghanistan. These activities can galvanize and promote industries with immediate and long-term potential, such as agriculture and construction, which build upon each other to facilitate growth. In economic terms, this “economy of agglomeration” model can be jump-started by leveraging spending already in practice by governmental agencies. By procuring locally whenever and wherever possible, transactions by regional contracting centers have the potential to be the foundation of long-term employment opportunities and prompt industry growth for Afghan businesses. This “Afghan First” approach promotes economic stability, creates jobs for Afghans, and helps build a sustainable market economy open to foreign investment. The COIN guidance is unequivocal: “Hire Afghans first, buy Afghan products, and build Afghan capacity.”

Our experiences in Iraq demonstrated how powerful the effects of policies like Afghan First can be in contingency environments. Many of the lessons from Iraq are applicable to Afghanistan. The primary lesson was that host-nation vendors can and will supply a significant portion of military requirements in theater. For instance, by 2007, all bottled water supplied to U.S. and Coalition forces in Baghdad was filtered, distilled, and bottled at an Iraqi-owned and -operated plant stood up after the fall of Saddam Hussein's regime. Making contracting accessible to host-nation vendors expanded the supplier base; vendor conferences, host-nation business advisors, and posting of all solicitations online in Arabic and English brought current and prospective suppliers under one tent. A single, common definition of what constitutes a host-nation vendor and thorough pre-bid vetting of vendors ensured that efforts had the intended effects. Theater-wide coordination of requirements ensured that the economic effects of contracting were strategically managed and could be synchronized with kinetic operations.

The Afghan First initiative is designed to function much like its predecessor in Iraq. Implementing Afghan First occurs through a variety of means, such as using local resources, encouraging responses from host-nation businesses on solicitations, contracting and paying in Afghan currency, and directly hiring Afghan nationals. To ensure an open, transparent process, all solicitations for contracts from the entire international community are posted to www.AfghanFirst.org in Dari, Pashto, and English. The emphasis remains on hiring locals, developing capacity and markets, using local sources, and rewarding/incentivizing contractors for adopting matching sourcing policies.

Challenges and the Risks of Inaction

Today's Afghanistan contingency contracting offices do not yet operate synergistically. Dozens of different offices operate independently, reducing opportunity for maximum strategic effect. The system needs visibility, and gaps re-

main in checks and balances to maintain order. Effective coordination across the acquisition continuum happens locally, rather than strategically. Without unified standards, contracting officers will always struggle to monitor payments, track and vet vendors, and gather intelligence on business operations to support the COIN strategy. Current technological difficulties compound the challenges: A lack of automation and a reliance on cash increase the risk of error and abuse. Systems in theater are often not optimized to function in an expeditionary environment and not designed to enable real-time decision-making at the strategic, operational, or even tactical levels. Understanding the risks and identifying existing gaps are a key step in improving the process. Meeting mission demands and the operational tempo is often accomplished at the sake of standards; we should be able to do both.

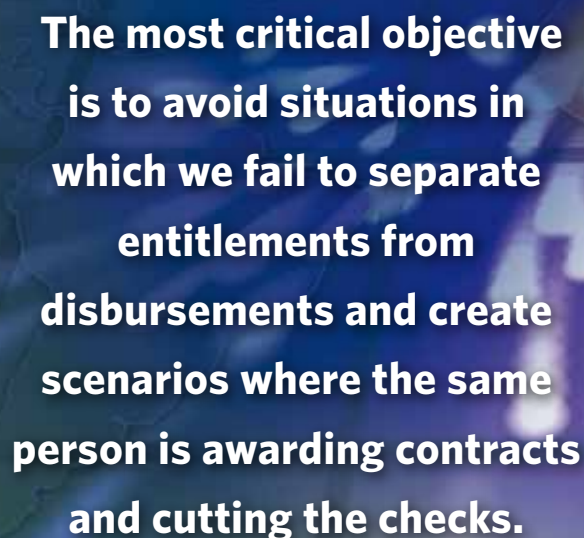
The process of planning, awarding, monitoring, and paying contracts for services carries challenges unique to the battlefield. The haste of activity on the battlefield and focus on mission execution create an environment where rules that apply in garrison are not enforced or are sporadically applied. The result is a theater process that differs from the garrison process and has a fidelity rate of only 60 percent, compared with 90 percent for actions retrograded or in garrison stateside. The most critical objective is to avoid situations in which we fail to separate entitlements from disbursements and create scenarios where the same person is awarding contracts and cutting the checks. While the lines are often blurred upon initial entry into a contingency, after the first phase of operations, the gaps should be closed and clear lines enforced.

Award of contracts to unvetted vendors is a significant concern with serious consequences. Moreover, lack of visibility on obligations and payments can result in vendors receiving duplicate or inaccurate payments. At any given time, some \$2 million in overpayments is outstanding and pending recovery. Without a standard process to vet vendors, opportunity exists for companies to become shadow companies, padding criminal pockets or funding the insurgency.

Additionally, while Afghan First is the right approach, it has limitations. Not all awards to locals provide equal effects. Failure to “spread the wealth” limits the economic benefit to local communities. An analogous effort exists within CONUS as the federal government sets aside procurements for small businesses but also reserves contracts for subcategories of small business like small disadvantaged businesses or businesses in historically underutilized business zones, to achieve specific effects. Today, we do not yet reach that level of granularity for businesses within the Afghanistan business community. Thus far in FY11, the top 100 Afghan firms have received more than 75 percent of total dollars (versus roughly 50 percent stateside).

Immature processes and a lack of automation pose internal and external challenges. Manual operations both result from

and perpetuate disaggregated approaches to business operations. Internal to contracting and financial shops, manual data entry is prone to errors, resulting in degraded reporting and weakened internal controls. If incorrect or conflicting contract information is entered into different systems of record, it becomes impossible to track obligations and disbursements from contracts. Extensive reliance on manual data processing also limits the amount of effort that critical military resources can devote to the mission-impacting



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aspects of theater business operations. Externally, within the host nation, lack of automated processes or electronic banking infrastructure drives a reliance on cash. In the early days of operations in Iraq and Afghanistan, large amounts of U.S. cash flooded the battlefield. This infusion of currency was a quick fix for immediate needs but led to untraceable funds and dollarized local economies. Reliance on cash is a primary indicator of insufficient processes and one of the largest impediments to visibility.

Systems themselves also present a large challenge to unified business operations. Today's business systems are suboptimal for an expeditionary environment. They are not conducive to the integrated, interoperable approach COIN contracting requires. In the COIN environment, systems that were not designed to operate in a seamless, end-to-end fashion integrate poorly if at all. In addition to interoperability, DoD business systems face physical challenges operating in a contingency environment. Business systems are designed to satisfy requirements derived from organizational needs, usually identified in garrison environments with insufficient consideration of adaptation to the expeditionary environment. Network accessibility and connectivity are often limited in a contingency environment. Competing priorities for access to limited bandwidth may preempt business func-

tions, which can be perceived as a lower priority. If unresolved, these challenges together could undermine or reverse contracting opportunities in theater.

Looking Forward: Call to Action

Achieving the ISAF acquisition goals of job creation, minimized corruption, transparency, automation, and vendor accountability requires a new unity of effort. Today's environment demonstrates a divide between mission effectiveness and efficiency; we can and must achieve both. A single acquisition leader must be given the responsibility—and authority—to coordinate and manage end-to-end acquisition processes, systems, and controls. This lead should create joint standards across the business space, enabling cross-functional processes and leveraging existing capabilities more effectively. By looking across the acquisition continuum, this leader can connect economic strategy to execution, understanding that like combat operations, business operations at 30 days will look different than operations at 60 days or 6 months or a year.

In 2009, U.S. Central Command (CENTCOM) and U.S. Army Central (ARCENT) contracting and financial leadership began to tackle some of these issues aggressively. The CENTCOM Joint Theater Support Contracting Command (C-JTSCC), then Joint Contracting Command-Iraq/Afghanistan, with support from the deputy chief management officer's Expeditionary Business Operations Group (formerly the Warfighter Requirements Directorate of the Business Transformation Agency) began work to identify the primary process gaps, improve business operations and help reduce cash on the battlefield. Since 2009, this team has made progress on improving contract reporting and accuracy, financial management and reducing cash on the battlefield and contract sites have nearly doubled reporting percentages. Significant numbers of payments are made in retrograde. There remains a disparity between the theater and the garrison processes, so much remains to be done. Even so, the data reveals the potential from taking even preliminary steps to optimize existing processes: over the past fiscal year, Expeditionary Business Operations Group and deployed commanders established traceability for \$4.7 billion in overseas contingency operations acquisition funds from requirement to disbursement.

Several noteworthy accomplishments include increased data integrity and availability, a new vetting process for vendors and cash off the battlefield. In fiscal year 2009, contract sites reporting to the electronic document access system increased from 51 percent to 92 percent. From a low point of 20 percent in 2009, contract availability in online systems of record reached 95 percent by the following fiscal year. Additionally, the percent of contract actions matched to entitlements and disbursements across the systems of record in theater rose from 7 percent in January to 59 percent in February 2011. Vendors are enrolling in systems that enable vetting and registration. Now efforts are focused on

importing a vetting process developed in Iraq to Afghanistan. This process thoroughly reviews all non-U.S. entities that register to bid on contracts in Afghanistan and uses threat finance components to grade entities for approval or rejection. By using one process theater-wide, this information can be leveraged across the U.S. government and NATO partners to synchronize use of vendors and contracts.

The cash off the battlefield initiative has also gained momentum. A major strategic shift took place in July 2010, when ARCENT issued an order to reduce cash in the combined joint operations area. This order dictated that contracting personnel pay all contracts in Afghanistan over \$3,000 via electronic funds transfers initiated in the United States. This requires that contractors in Afghanistan have or arrange bank accounts capable of receiving such transfers. It also retrograded contracts, invoices, and acceptance reports back to the United States. By paying remotely and electronically, retrograde payments remove cash from the battlefield. By October 2010, 90 percent of ARCENT payments were made in retrograde.

Way Ahead

A single lead organization chartered to integrate the acquisition continuum from requirement to disbursement is central to achieving COIN contracting goals. From an operational perspective, this single lead will serve three primary functions. First, provide the battlefield commander with daily business intelligence on where funds have been and will be spent, who is receiving the funds, and for what purpose. Second, the lead should act to establish controls and analysis across the acquisition continuum, gauging progress towards the ISAF goals of reduced corruption, economic revitalization and transparency. Third, this lead should bear responsibility for integrating the theater business plan into the campaign plan.

To accomplish this, we must establish an organization empowered with the resources and authorities to unify acquisition and business activities. At its helm, the leader chartered to integrate business operations will then shape its structure, including the command reporting structure and interagency coordination framework that will align ISAF, U.S. government, and partner efforts. This begins with a core team with experience working across the acquisition continuum. Not only is streamlined leadership essential to creating and implementing a unified strategy, but it is also necessary to ensure progress is institutionalized and lessons are noted. If this solution is implemented, and a leader is chartered to integrate efforts and create a coherent strategy, then contingency contracting will reach its full potential as a tool for commanders in Afghanistan. In this end state, the theater commander will have the same visibility on acquisition effects as on kinetic effects, making business operations a powerful force in the COIN strategy. Then the scale of our contracting dollars will become a force multiplier, mitigating challenges and achieving opportunities.

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2011 Defense Acquisition Workforce Awards

This year's Defense Acquisition Workforce Awards were presented Oct. 13 at Fort Belvoir, Va., by Under Secretary of Defense for Acquisition, Technology and Logistics Frank Kendall and Defense Acquisition University President Katrina McFarland, as part of the Program Executive Officers' Systems Command (PEO/SYSCOM) Commanders' Conference.

USD(AT&L) David Packard Excellence in Acquisition Award

The David Packard Excellence in Acquisition Award recognizes organizations, groups, and teams who have demonstrated exemplary innovation using best acquisition practices that achieve acquisition excellence in the Department of Defense.



PM Stryker Double V Hull (Army)

(L-R) Lt. Col. James W. Schirmer, Under Secretary Kendall; Scott J. Davis, Katrina McFarland.



5.56mm M855A1 Enhanced Performance Round Integrated Product Team (Army)

(L-R) Col. Paul Hill, Frank Hanzl, Joseph South, Under Secretary Kendall, Katrina

McFarland, Jennifer Paul, Matthew Volkmann, Brig. Gen. Jonathan Maddux.



Personal Signature Management Jointly Integrated Acquisition Task Force Team (USSOCOM)

(L-R) Maj. Stephen Cook, James Bellemare, Duke Dunnigan, Under Secretary Kendall, Katrina McFarland, Steve Chamberlain, Thomas Mills.

V-22 Cost per Flight Hour Reduction Team (Navy)

(L-R) Steve Vannote, Duke Wells, Col. Greg Masiello, Under Secretary Kendall, Katrina McFarland, Randy Stalvey, Mike Belcher, Greg Ashley.



Photos by Erica Kobren

USD(AT&L) Workforce Achievement Award

The USD(AT&L) Workforce Achievement Award was established to encourage and recognize individuals who have demonstrated excellent performance in the acquisition of products and services for the Department of Defense. This program recognizes DoD military members and civilian personnel who represent the best in the Defense Acquisition Workforce.



Contract Auditing

Cindy Wagoner,
U.S. Army



Business

Jeffrey Schrader
U.S. Air Force
As Chief Finance Officer, Air Force
Rapid Capabilities Office (AFRCO)



Contract and Procurement

(including Industrial/Contract Property
Management, Contract Oversight, and
Quality Assurance)
Ann Birbeck
U.S. Air Force



Program Management

Capt. Michael Moran
U.S. Navy

USD(AT&L) Workforce Achievement Award (continued)

Life Cycle Logistics

Don Schmitt,
U.S. Navy



Systems Planning, Research, Development and Engineering

(including Production, Quality, and Manufacturing)
Duane Strickland,
U.S. Air Force



Test and Evaluation

Maj. Timothy Bode,
U.S. Air Force



Information Technology

Terry Ricket

Acquisition in an Expeditionary Environment

Lt. Col. Renee Holmes,
U.S. Special Operations
Command

Photos by Erica Kobren

USD(AT&L) Workforce Development Award

The USD(AT&L) Workforce Development Award was established May 28, 2004 for the purpose of recognizing those organizations that are achieving excellence in learning and development for their employees. Additionally, the award program identifies best practices for other organizations to adopt.



Gold, Large Organization Naval Surface Warfare Center, Port Hueneme Division

(L to R) Capt. William DeBow,
Under Secretary Kendall, Timothy
Troske, Katrina McFarland, Rear Adm.
James Shannon.



Gold, Small Organization Aeronautical Systems Center, Acquisition Excellence Directorate

(L to R) Under Secretary Kendall,
Howard E. Marks Jr., Donald W. "Bill"
Hofele Jr., Katrina McFarland.



Silver, Large Organization Space & Naval Warfare Systems Center Atlantic (SSC LANT)

(L to R) Under Secretary
Kendall, Krista M. Shiver,
Pamela K. Bell, Timothy
K. Dowd, Katrina
McFarland.

USD(AT&L) Workforce Development Award (continued)



Silver, Small Organization

United States Special Operations Command (USSOCOM)-SORDAC

(L-R) Eric A. Gustafson, Under Secretary Kendall, Rebecca Gonzalez, Rachel Ford, Katrina McFarland, Ted Koufas, Kim Kunding.



Bronze, Large Organization
Defense Information Systems
Agency (DISA)

(L-R) Under Secretary Kendall, Pamela J. Clay, Rebecca S. Harris, Jay Boller, Katrina McFarland.



Bronze, Small Organization
Communications Security
Logistics Activity (CSLA)

(L-R) Under Secretary Kendall, David W. Nichols, Katrina McFarland.

Photos by Erica Kobren

Acquisition Program Management Challenges in Afghanistan

Part 2: Afghan Vendor Base

Maj. Darren W. Rhyne, USAF



Photo by Natela Cutter

In my previous article, I wrote about deployed program manager challenges with generating and managing requirements with Afghanistan National Security Forces (ANSF) and Coalition military counterparts. This article will discuss the challenges of procuring defense items made to those requirements from the Afghanistan vendor base in the midst of an active counterinsurgency campaign.

First some background on Afghanistan and its vendor base: An accurate census of the country is not available, but population estimates range from 25 to 30 million people, of which 35 percent to 40 percent are unemployed. Literacy in native languages of Dari and Pashtu, much less English, is one of the largest deficiencies. Literacy rates are only 8 percent to 10 percent in rural areas and 25 percent to 30 percent in urban areas. Vocational schools and universities are just starting to come back after 30 years of conflict with the Soviets and harsh Taliban rule.

Rhyne is a professor of systems engineering management at DAU, Capital & Northeast Region. He holds an MS in international relations and a BS in mechanical engineering. He is Level III certified in SPRDE SE Management and SPRDE S&T Management, Level II in PM, and Level I in T&E. He was deployed to Camp Eggers, Kabul, Afghanistan, as chief of local acquisitions Feb. 20, 2010–Feb. 13, 2011.

Thus, there is a large pool of people who want to work but few with the technical skills needed, forcing Afghan companies to provide much on-the-job training, not only in the technical skills required but also in the basic literacy needed to follow written specifications and other literacy-dependent tasks. This is a major difference between the U.S. industrial base and that of Iraq, where literacy is over 70 percent.



Part of the reconstruction effort here is dedicated to mentoring the vendors on making products to international standards so they can one day compete in external markets.

In addition, few businesses there provide processed raw materials to make defense items, forcing manufacturers to import them from neighboring Pakistan or other Asian or European states. Cotton, wool, and tannery industries once provided processed materials for the clothing industry but most have not been rebuilt, as food production has been the main focus of agribusiness reconstruction. The lack of raw materials available introduces further complications into current and prospective vendors' business plans, as the security situation and customs process can delay arrival of imported required materials by weeks or months.

One of the first challenges in getting approved requirements turned into products made in Afghanistan is putting together the solicitation in terms that the Afghan vendors can understand and to which they can properly respond. These solicitations are released by the Regional Contracting Center in English, and it is the vendors' responsibility to translate them into their native language (predominately Dari in Afghanistan). Therefore, it is very important not to use DoD/American slang, colloquialisms, and unexplained acronyms in solicitations, statements of work, performance work statements, and technical specifications because they may be translated incorrectly or not even have a counterpart term in Dari.

Once the solicitation is ready to release for bids, advertising it in Afghanistan presents additional challenges. U.S. contracting practice is to post the solicitation on one of the standard U.S. government websites, such as Federal Business Opportunities, DoD Business Opportunities, and Army Single Face to

Industry (ASFI) Acquisition Business. U.S. Central Command Joint Theater Support Contracting Command (C-JTSCC) posts theater solicitations on the Joint Contingency Contracting System site (www.jccs.gov). C-JTSCC has also partnered with a Canada-based non-governmental organization called Peace Dividend Trust to post solicitations over \$25,000 on its Peace Dividend Marketplace Afghanistan website (<http://afghanistan.buildingmarkets.org/for-suppliers>). Vendors can register to be notified via e-mail when solicitations of interest to them are posted. However, not all Afghan business owners have access to the Internet, much less know where to search for solicitations and navigate those sites to find solicitations to which they might competitively respond. For a full and open competition to reach more of the potential Afghan business responders, other communications methods such as radio and newspapers might also be employed to advertise the release of new solicitations and where to find them.

Another challenge encountered by program managers and contracting officers is the Afghan vendors' lack of experience in properly and fully responding to the solicitations. U.S. government solicitations are much more complex than those of the Afghan government and are usually geared toward the U.S. vendor base used to responding to them. Therefore, Peace Dividend Trust and some of the 13 Regional Contracting Centers in Afghanistan offer training to Afghan vendors on how to properly respond to U.S. government solicitations. As an example, my predecessor, Air Force Maj. Chuck Seidel developed a solicitation for an "8a-type" set-aside to Afghan Women-Owned Businesses (AWOBs) to manufacture 23 items of Organizational Clothing and Individual Equipment (OCIE) and released it through Kabul Regional Contracting Center in mid-2009. However, none of the proposals received was considered responsive due to the AWOBs' inexperience in bidding on U.S. government contracts.

Instead of giving up on the local vendors and taking the easy way out by procuring the items from U.S. vendors, Maj Seidel and the contracting officer, Patti Babida, conducted two proposal preparation training classes for over 60 AWOBs in the fall of 2009. The solicitation was re-competed in spring 2010, and the Security Assistance Office/Local Acquisition (SAO-A/LA) OCIE team was able to conduct a successful source selection among several responsive AWOBs that summer and select three of them for contract awards, which took place in August. Perseverance paid off with millions of dollars in base year awards and the employment of hundreds of Afghan women. Some Afghan businesses are also partnering with U.S. firms or employing Western consultants to help them prepare better proposals.

The Afghan First Policy does not constrain Afghan companies from partnering with or employing outside consultants. According to C-JTSCC's Policy Memo 10-07, dated 8 Jul 10, as long as the business itself is owned by an Afghan citizen, Afghan national(s) hold over 51 percent share of the business as indicated in its licensing documentation, and holds a current

business license with a licensing authority of the Government of the Islamic Republic of Afghanistan (GIROA), namely the Afghanistan Investment Support Agency (AISA), it is considered an Afghan business eligible for Afghan First competitions.

What if you don't even know if Afghan industry can produce an item in-country? There are few industry trade or professional organizations and those that do exist focus mainly on food, construction, and banking. There is no Afghan Contractor Performance Assessment Reporting System (CPARS) database to consult. Peace Dividend Trust and C-JTSCC maintain registered vendor databases by commodity but little about vendors' actual performance. So, the program manager is left to do his own market research, including use of the Request for Information (RFI) mechanism to solicit responses from industry to assess their production capabilities. The SAO-A/LA OCIE team used an RFI in fall 2010 to assess Afghan industry's capability to produce nine nylon-based OCIE items. They found that some items were more feasible to produce here than others and were able to pare down the list to four items for which to continue requirements development for eventual solicitation in spring 2011.

So you've got your requirements, your solicitation, and your responsive bidders. How do you know that the bidders are legitimate and, especially in the COIN campaign, not tied to the insurgency? Mechanisms were put in place by several organizations in 2010 to help respond to this challenge.

To ascertain the legitimacy of businesses from an Afghan First Policy perspective, the contracting officer's vendor vetting team, Peace Dividend Trust, and the SAO-A/LA team conduct site visits to responsive prospective bidders. The bidders' business credentials are checked with the GIROA AISA licensing authority and their past performance is checked in the JCCS database, if it is so documented. To ascertain possible vendor ties to insurgent groups or criminal organizations, the U.S. government established Task Force (TF) 2010, TF Spotlight, and TF Shafafiyat over the past year and is creating a database to compile their findings.

Getting out of camp to visit vendors presents its own challenges for the PM team in an active counterinsurgency environment in Afghanistan. One can't just hop in a vehicle and drive to the factory. Threat levels must be assessed via intelligence reports and a movement control form routed for approval to the SAO-A Director. A minimum of two up-armored vehicles with two people each are required, not to mention the requisite personal protective equipment, small arms, radios, personnel locator beacon for each team member, etc. The SAO-A/LA team provides its own security, for which pre-deployment training, mission task certifications, and periodic refresher battle drills are especially important. For the SAO-A/LA office of 16 people, one vendor visit requires at least a quarter of its manpower and some days almost the whole office is out at least half the day visiting separate vendors in various parts of Kabul. In addition, rank restrictions for convoy/mission commanders (E-6 or above)

and truck commanders (E-5 or above), plus the assignment of only three vehicles to our shop limited how many missions can be run at a time and who can conduct what tasks. This can be especially challenging during times of members' rest and recuperation leave and deployment changeovers, when qualified people leave and their replacements are not yet qualified to drive or command.

Finding a new vendor's location in a city of over 2 million people is also challenging due to the lack of road signs, street names, and house numbers posted. Portable GPS devices are somewhat helpful here but one must use latitude and longitude, not addresses, to mark locations. Road conditions are abysmal, with no traffic lights, few street lights, very few modern paved roads, and no discernable licensing of drivers. At least Afghans drive on the right-hand side of the road (most of the time), but European-style traffic circles, questionably trained traffic police, and, of course, the threat of suicide bombers dictate that everyone in the vehicle maintain vigilance to their surroundings. Visits to vendors to conduct oversight/quality assurance inspections and to ANSF facilities to coordinate requirements and inspect deliveries leaves you physically and mentally drained upon return to base.

The security situation in Afghanistan also dictates that vendors take precautions. They hire private security companies or designate their own employees to provide armed security and



Getting out of camp to visit vendors presents its own challenges for the PM team in an active counterinsurgency environment in Afghanistan. One can't just hop in a vehicle and drive to the factory.

almost all have walled compounds. This makes doing surprise inspections somewhat daunting, to say the least, when the PM team rolls up on the vendor's facility and faces non-English-speaking guards with AK-47s who do not want to allow the team entry. In addition, vendors do not usually have much storage capacity to keep on-hand stocks of commercial commodities they have imported or items they have manufactured and have to guard against insurgents or criminal gangs robbing their facilities or delivery trucks. Finally, vendors have to hire private security companies (PSCs) to guard their delivery

trucks outside of Kabul, the cost for which they pass along to the U.S. government. Afghan President Karzai signed a decree to abolish all PSCs, especially foreign-owned, in late 2010 so the transition period from PSCs to government-provided security may challenge vendors to make timely deliveries.

Once the contract is awarded, it is usually up to the program manager to facilitate quality assurance surveillance on the vendor. Due to the security situation, there is no Defense Contract Management Agency (DCMA) representative stationed at the vendor's facility every day. While there are DCMA personnel on the ground here who are delegated administrative contracting officer's representative responsibilities, they rely on the program management team to provide secure transportation to conduct site visits. Frequent quality assurance surveillance is especially important in Afghanistan, since many companies have little to no experience implementing a quality assurance program to international standards with the aforementioned workforce with which they have to work. Therefore, part of the reconstruction effort here is dedicated to mentoring the vendors on making products to international standards so they can one day compete in external markets.

These oversight and quality assurance visits serve several purposes. First, the PM/DCMA team must mentor the Afghan government management and technical acceptance personnel who will one day take over management of these production efforts to convince them that quality products can be made in-country, what is involved in developing and maintaining quality products, and the life cycle cost benefits of going beyond the lowest priced, technically acceptable item. This also gives the ANSF a stake in the product development and improvement to both take credit for successes and learn from mistakes, instead of just blaming the Coalition for buying them something they didn't want or that doesn't work properly. Second, site visits keep the vendors honest by their understanding that the PM, DCMA, and ANSF personnel can and do conduct periodic and unscheduled site visits to inspect their work. Finally, having the ANSF technical acceptance personnel accompany the PM/DCMA team's site visit shows the vendor that the Afghan government is interested in their work and is partnering with the Coalition to see that the work is done properly.

A successful Afghan-made program is very satisfying for the deployed program manager. Bringing requirements development to fruition with a contract award and delivery of actual full-rate production items within a year is quite an accomplishment—and one that the SAO-A/LA team repeated a few times during my deployment. However, that success does come with the burden of preparing and conducting many briefings to senior leadership. There is also the burden of conducting vendor site visits accompanied by public affairs and distinguished visitors; these require much time to plan and execute. Those visits can also strain relationships with vendors, as frequent factory tours can be disruptive to their normal day-to-day efforts just to get things done to meet delivery schedules. The PM team must also be wary of the Coalition leadership arranging its own

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3. CENTCOM Contracting Command Acquisition Instruction (2010, November 5). <http://www.c3-training.net/docs/C3%20ACQUISITION%20INSTRUCTION.pdf>

Two valuable web resources:

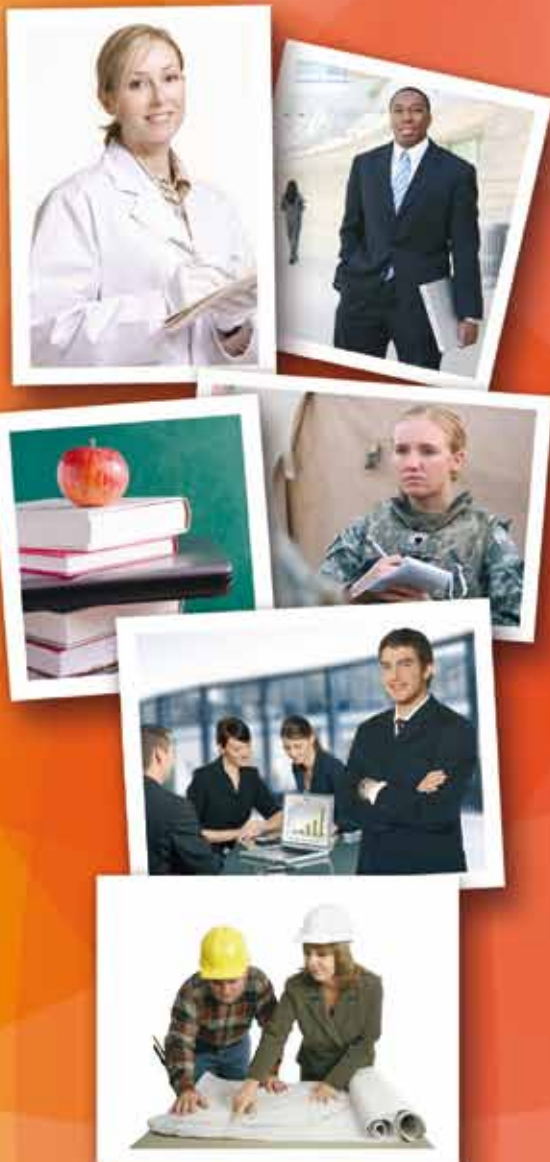
Peace Dividend Trust: <http://afghanistan.buildingmarkets.org/>

Afghan First.Org: <http://www.afghanfirst.org/>

site visits without knowledge or participation of the PM. One notable example of this was a member of the NTM-A/CSTC-A leadership visiting the Melli Trading boot factory with a Pentagon Channel reporter in late 2010. Not only did the SAO-A/LA boot PM not accompany the visit, the SAO-A/LA team was not even credited with leading and managing the program in the story which aired later. Lesson learned: The PM must include strategic communications in his normal management strategy to get the story out under manageable conditions.

This last point is the main reason I undertook the task to write several articles and conduct two Afghan radio interviews in my final 3 months of deployment. I wanted to get our successes, failures, and lessons learned out in my own words, with proper command approval, of course. I was very fortunate to be placed in a position as chief of SAO-A Local Acquisitions to use my 19 years of acquisitions, systems engineering, budgeting, and headquarters staff officer experience in a contingency environment where I was able to see the results of my team's work, contribute to the counterinsurgency campaign, and help rebuild a nation. I look forward to applying what I've learned there to my teaching position at Defense Acquisition University until I retire at the end of 2011. What a way to wind down a career!

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The Drag Efficient

The Missing Quantification
of Time on the Critical Path

Stephen A. Devaux



ritical path analysis has been around for more than half a century. An argument can be made that no project management technique is more important. Yet in project management theory and in scheduling software, there is the significant omission of two vital critical path metrics: *drag* and *drag cost*.

Critical path drag is a key metric in the planning and scheduling of a project. It measures how much a critical path item is delaying project completion. Its greatest value is to the contractor who must manage the schedule. But it is also crucial for the customer to know that the

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project team is using this metric both to generate an efficient schedule and to target the most appropriate work packages when slippage occurs.

The drag cost of an activity has even greater implications for the customer; it is the amount of value that the project is losing due to delivery being delayed by that activity's critical path drag. Unfortunately, financial analysis of project work tends to focus almost exclusively on budget. Benjamin Franklin wrote that time is money. Every customer knows that the time required for a project comes at great cost. Those funding projects often would willingly pay significantly more to accelerate deployment of a mission-critical system. Since it is exclusively critical path activities that are delaying project completion, the cost of delay is an invisible and expensive cost of critical path work.

The problem is the inability to identify which critical path activities are costing the time and money—i.e., their drag and drag cost. This article will show that the use of these concepts is vital to on-time delivery, schedule recovery, and the generation of maximum customer value.

Impact of Critical Path on Project Investment

All projects, without exception, are investments, undertaken to create greater value than the cost of the required resources. No customer or sponsor would ever *knowingly* invest \$5 million worth of resources if the total value from the final product, from all sources, was only expected to be \$4.9 million. The difference between the value of the final product and the cost of producing it, what we might call *project profit*, should be a key metric for project performance (as it is for all other investments!). The cost of a project investment is always carefully tracked—but the return, or the *expected monetary value* (EMV) of the scope is little analyzed and often ignored.

One of the main factors that can affect the EMV of a project is changes in delivery date. It is usually the case that the earlier the delivery date, the greater the value of the project investment. Delivery date is always determined by the project's longest, or critical, path. This may start as a planned critical path, but will finish as the actual longest path, or what the construction industry terms the "as-built critical path" (ABCP). The project manager should recognize the overwhelming importance of this path, and manage it. During project postmortem, the ABCP and the changes

Drag Cost in Human Lives

Benjamin Franklin's dictum that time is money sometimes understates the case: on some projects, time can be measured in human suffering and death. Examples can be found in pharmaceutical development, hospital systems, emergency response—any endeavor in which projects are undertaken to save lives.

Deployment of homeland security and defense systems are prime examples of efforts where human lives are often on the line. To identify just one example, earlier deployment of a countermeasure to defend against MANPADS (man-portable air-defense systems) could protect aircraft in a combat zone and save many American lives. If the annual loss of life in a combat zone due to MANPADS is determined to be 50, and a planned countermeasure deployment would reduce that number by half, then decreasing the drag of *any critical path activity* by 2 weeks would eliminate an estimated drag cost, over and above the dollars, of the death of an American soldier.

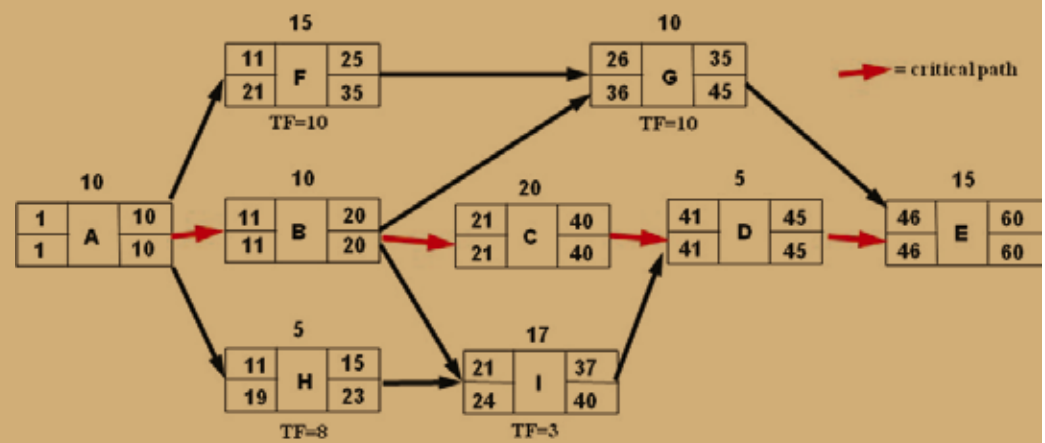
from plan that may have generated it should be a vital artifact and a generator of lessons learned.

Gaps in traditional critical path data

Whether dealing with the planned critical path or the ABCP, it is important to recognize that both the gods and the devils are in the details. Good schedule management requires knowing the contribution of each activity (as well as technical difficulties, scope changes, resource insufficiencies, schedule constraints, etc.) that contributes time to the length of the path. And here, unfortunately, we enter an area in which critical path theory, as beneficial and vital as it is, is silent.

What does critical path analysis tell us about each activity in our project? If an activity is not on the critical path, both critical path theory and traditional program management software quantify something called either *total float* or *total slack* (depending on the software): the maximum amount of time that

Figure 1: A Simple Network Logic Diagram, Showing Forward and Backward Passes and Total Float



an activity can be delayed without making its path the longest in the project.

Figure 1 shows a simple network logic diagram of a project with the earliest and latest dates for each activity filled in on top and at bottom respectively. Let's assume that this is the schedule of a project with a 45-day deadline, with each additional day reducing investment value by \$10,000.

As the network shows, the critical path is A, C, E, H, I, and the project duration would be 60 days. The total floats of the non-critical activities would be:

F = 10
G = 10
H = 8
I = 3

But since total float quantification is all *off* the critical path, this gives us little help in knowing where to compress the schedule. And unfortunately, no similar quantification is performed for activities that are *on* the critical path! For each critical path activity, the software (and all traditional PM theory, including the *PMBOK Guide*) simply says zero—that its total float is zero.

Of course, project schedules are much more complex than the simple example shown in Figure 1. But no matter how large or complex the schedule, the project manager's approach should always be to make the project schedule as efficient as possible, providing the customer with the greatest value for the least cost.

The trouble is that most traditional project management metrics are silent about what we all know is really important: the critical path. What we need to know is:

1. Of all the activities on the critical path, which are adding the most time to project duration and offer the greatest "bang for the buck" if shortened?
2. How much money is each activity's added time costing, and how much would it cost to compress it?

The first metric that addresses this issue is not float—it's the much more important metric, critical path drag (as introduced in my book *Total Project Control: A Manager's Guide to Project Planning, Measuring and Tracking*, published in 1999 by John Wiley & Sons). Just as drag is what slows down a submarine or an airplane, critical path drag is the

A Historical Example of Drag Cost in Human Lives

In 1991, during the first Gulf War, it was discovered that a software bug in the radar of the Patriot anti-missile system was causing the timing system to lose a small fraction of a second for every hour that a battery had been operational. Quoting from the February 4, 1992, report of the Information Management and Technology Division of the United States General Accounting Office (<http://www.fas.org/spp/starwars/gao/im92026.htm>):

On February 21, 1991, the Patriot Project Office sent a message to Patriot users stating that very long run times could cause a shift in the range gate, resulting in the target being offset. The message also said a software change was being sent that would improve the system's targeting. However, the message did not specify what constitutes very long run times...

...Alpha Battery, the battery in question, was to protect the Dhahran Air Base. On February 25, Alpha Battery had been in operation for over 100 consecutive hours. Because the system had been on so long, the resulting inaccuracy in the time calculation caused the range gate to shift so much that the system could not track the incoming Scud. Consequently, Alpha Battery did not engage the Scud, which then struck an Army barracks and killed 28 American soldiers.

On February 26, the next day, the modified software, which compensated for the inaccurate time calculation, arrived in Dhahran. According to Army officials, the delay in distributing the software from the United States to all Patriot locations was due to the time it took to arrange for air and ground transportation in a wartime environment.

Although there is always a strong tendency to blame the last few activities (i.e., "the time it took to arrange for air and ground transportation") for a late delivery, the fact is that every critical path activity contributes to the project's duration. In this case, every activity that had drag of 1 day or more, and that might somehow have been shortened through additional resources or expense, could have saved the lives of those 28 soldiers.

Figure 2: A Simple Network Logic Diagram with Drag Computed

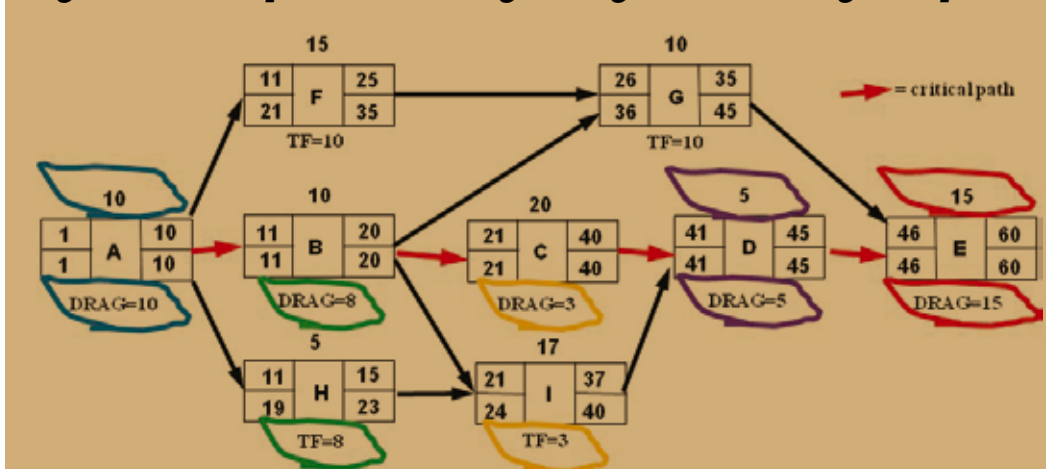
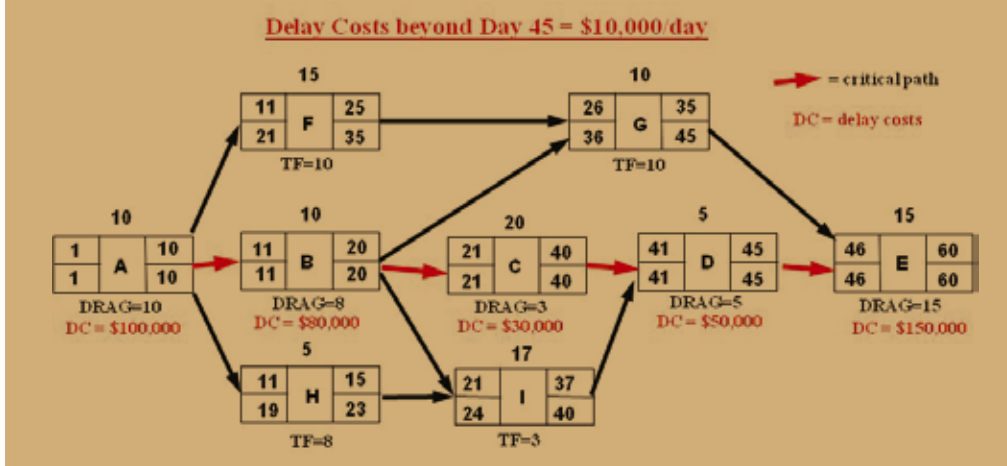


Figure 3: A Simple Network Logic Diagram with Drag Cost Computed at \$10,000/Day



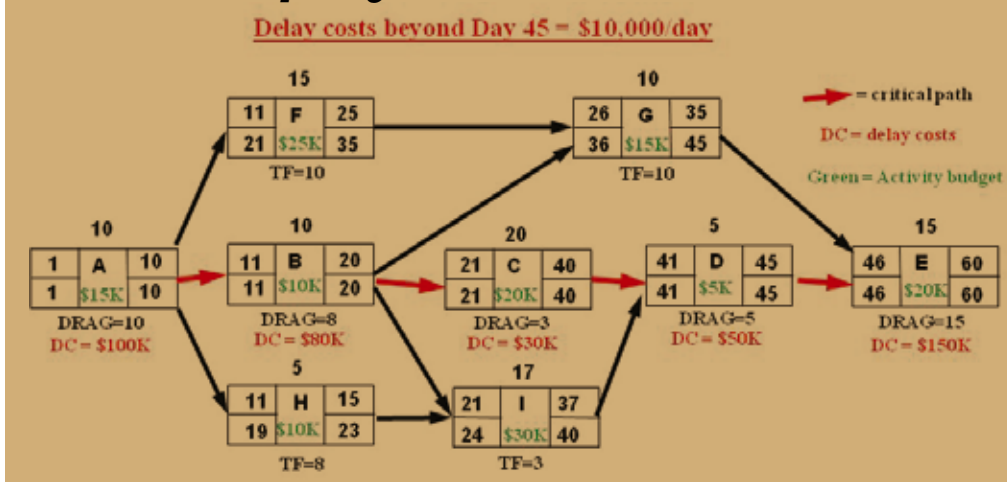
- Step 1: Only critical path activities have drag.
- Step 2: If an activity has nothing else in parallel (e.g., A and E above), its drag equals its duration.
- Step 3: If a critical path activity has other activities in parallel, its drag is *whichever is less*: the total float of the parallel activity with the LEAST total float (B and C above), OR its own duration (D, whose duration of 5 days is LESS than the 10 days of total float in each of the parallel activities F and G).

Today, three software packages compute drag:

- Project Optimizer from Sumatra.com (an MSPProject 2007 add-on)
- PlanontheNet.com
- Spider Project

Of course, there is more to schedule optimization than drag computation. Just because Activity E has drag of 15 and Activity B's drag is only 8 does not necessarily mean that you can shorten

Figure 4: A Simple Network Logic Diagram with both Drag Cost and Activity Budgets



amount of time by which a critical path activity is slowing down the project. *And it is vital information for any project manager to know about the activities in her project!*

- Float is always off the critical path, whereas drag is always on critical activities.
- Float usually does not cost the project time and money, whereas drag almost invariably does!

There is an old saying: "What is measured is what is emphasized." As a result of the standard CPM metric of total float, the emphasis winds up being on precisely the wrong things—the work that's not on the critical path! What the project manager needs to know is: *how much time is each critical path activity adding to my project duration so that I can target the best tasks for compression.* This is critical path drag. In Figure 2, we show the drag totals on the critical path activities:

Although "manual" drag computation in a large network with complex dependencies (Six Sigma, lag, etc.) can be intimidating and time-consuming, it is relatively easy in a simple network such as the one above:

E more than B.

- Some activities are less "resource-elastic" than others, i.e., adding resources may do little to shorten their durations.
- Shortening some activities may increase risk unacceptably, decrease quality, or otherwise reduce project value and profit.
- The resources needed to reduce one activity by each unit of time may be much more costly than those needed for an equal or greater reduction on a different activity.

However, when trying to shorten the project duration (either up front during planning, or during execution when schedule slippage may leave the project manager seeking alternatives), we may be searching through a network of not five activities but 500 or 5,000! Then there needs to be a way of focusing the process of schedule reduction onto those candidates which will provide the greatest reward. These are almost always the activities with the greatest drag.

In Figure 2, even though Activity C has a duration of 20 days, it is only adding 3 days to the project schedule. By contrast,

The *USS Monitor*: A Happy Story of Limiting Drag Cost

When news reached the U.S. Navy in late 1861 that the Confederate Navy was working to convert the former *USS Merrimack* into an ironclad warship, an emergency order went out for the design of a Union ironclad. John Ericsson's model of "a cheesebox on a raft" was selected, and on October 4, 1861, Continental Iron Works and DeLamater Iron Works, both of New York, were contracted to build the Union ironclad.

Ericsson had no project management software, and had never read an article about critical path drag. But he was an engineering genius managing an urgent project. Under his direction, the *USS Monitor* was launched in Brooklyn and began preparations for combat on January 30, 1862, just 118 days after the Navy's order was submitted.

On March 6, the process of towing *Monitor* down the Atlantic Coast to Chesapeake Bay began. Late on March 8, the former *Merrimack*, now rebuilt into the ironclad *CSS Virginia*, attacked the Union squadron blockading Hampton Roads and sank *USS Cumberland* and *USS Congress*. At dusk, the *Virginia* returned to port, intending to finish the job the next morning. But that night the *Monitor* arrived, and on March 9 the two ironclads fought their famous battle to a draw, leaving the Union blockade in place.

The cost of the one extra day it took for *Monitor* to arrive was high, but two days would have cost far more! Had Ericsson had software to help him eliminate one more day on his critical path, the lives lost on the two Union warships might have been saved. Conversely, had he not so brilliantly shortened the project schedule as much as he did, the blockade would probably have been broken and the Union might have lost the war.

even though Activity D has a duration of just 5 days, it's adding 2 more days to the critical path than is Activity C. And, all else being equal, Activity E may offer the greatest opportunity with 15 days of drag.

Computing the Drag Cost of an Activity

Ben Franklin's statement that "Time is money!" is never more accurate than when applied to projects. The key is to tie the cost of project delay to each individual activity generating the delay. The cost of this delay is caused by the activity's critical path drag, and is the activity's drag cost.

Drag cost represents the synthesis of the concept of project profit with a truly scope/cost/schedule-integrated plan. It is the reduction in the net value of the project because of the delay in project completion due to the time impact of each activity's drag. It may be caused either because the delay reduces the project's expected monetary value, or because the delay increases the indirect costs (overhead and opportunity costs).

Figure 3 computes the drag cost of each activity if the cost of delay beyond 45 days is \$10,000 per day.

Drag cost assigns the cost of project time to the individual critical path activities that are adding that time to the schedule. Suddenly, not only does Ben Franklin's dictum apply to projects—it now applies to individual work items in the project, and to the resources performing that work. This allows the project manager to assess the relative cost of each work item, and to target additional resources to reduce the drag cost.

Computing the True Cost of an Activity

Although finance departments have taught us to identify the cost of work with the price of the resources doing that work, this is simply not true of work performed on the critical path of a project! A week's work by a minimum-wage laborer can be much more costly than a week's work by a Nobel laureate physicist—if the physicist's work has float while the laborer's work is on the critical path with lots of drag cost! The true cost of project work is the sum of the resource cost and the drag cost (which of course is zero if the work is not on the critical path).

In Figure 4, we have provided the budget for each activity's resources. Even though most financial analysis would determine that Activity I is the most costly work (with a budget of \$30,000) since it has no drag cost, it's actually not even close. Since Activity I is not on the critical path, its true cost is only its resources. Conversely, Activity E's true cost is the sum of its \$20,000 budget and its \$150,000 of drag cost, or \$170,000. The true cost of each activity is as follows:

A = \$15,000 + \$100,000 = \$115,000

B = \$10,000 + \$80,000 = \$90,000

C = \$20,000 + \$30,000 = \$50,000

D = \$5,000 + \$50,000 = \$55,000

E = \$20,000 + \$150,000 = \$170,000

F = \$25,000

G = \$15,000

H = \$10,000

I = \$30,000

Computing the true cost of an activity can provide huge benefit to the customer, the project manager, and to the organization performing the project.

Additional resources can be targeted to the activities with large true cost. For example, if doubling the daily resources on Activity E reduced its duration and drag from 15 days to 10 days, its budget would increase from \$20,000 to \$26,700, but its drag cost would be reduced by \$50,000 and its new true cost would be only \$126,700 (\$26,700 + \$100,000), or \$43,300 less.

Some optional activities ("nice-to-haves" rather than "must-haves") often wind up delaying a project by more than they are worth. Drag cost computation would allow both the customer and the project manager to recognize the true cost of optional

Using Drag to Accelerate the Schedule of a Subdeliverable

A few years ago, a client called to see if I could help with a scheduling issue on a large project: the customer had requested that delivery of a certain component be accelerated by 5 weeks. Part of the problem was that the component was not on the critical path of the 3 year project; it had over 200 days of float. The earliest it could be completed, according to the master schedule, was 5 weeks later than the customer now needed it. And the program manager didn't know where to start.

In such cases, it is crucial to have a "clean" schedule: with up-to-date progress information, correct dependency links, and no activities performed out-of-sequence (the bane of schedule analysis!). It took a while to "scrub" the data. After 3 or 4 hours, we felt that we had an accurate schedule from the current date forward. Then:

1. We targeted the component delivery, making it our last or "sink" activity.
2. We identified the target's "ancestors," i.e., all earlier activities on the same logical path: predecessors, predecessors' predecessors, etc.
3. Next we eliminated all activities that were NOT ancestors to get a subset of only those activities that were ancestors of the targeted activity.
4. We identified the critical path to the targeted activity, and computed the drags.
5. Finally, we pulled in the component's delivery date just as we would the end of a project, by fast tracking or crashing the durations of those activities with the most drag, recalculating activity drags as the critical path changed.

The adjustments made the component's desired delivery date achievable.

work when it migrates to the critical path and determine if it is of sufficient value or whether it should be jettisoned. (This analysis should be performed any time that the critical path changes, loading a new set of activities with drag cost during project performance.)

Any organization in the business of performing multiple simultaneous projects should conduct quarterly assessments of the true cost of specific resource types (mechanical engineer, programmer, etc.) and create Pareto charts highlighting those that have the greatest true cost. Increases in such resources will usually result in decreases in the drag cost component of their summed true costs.

A Concluding Anecdote

A few years ago, while teaching the concept of drag in a seminar, an engineer who worked with a large defense contractor told an illuminating story. The customer had requested that a specific deliverable that was not part of the project's critical path be pulled in by 6 weeks. The transcontinental team all flew to a central site and spent a full day suggesting the changes they thought would meet the new scheduling needs. When they were finished, they incorporated the changes into the master schedule—and the deliverable came in by 1 day! The team then spent the rest of the week engaged in pure trial-and-error: "What if we could do this in 8 days instead of 12? Nope, no change." "What if we made this 5 days instead of 14? Okay, we gained 3 days!" The engineer told me: "If we'd understood the concept of drag, we'd never have even left our offices. We could have accomplished our goal in a half-hour conference call."

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From the Managing Editor

It's well known to the readers of this magazine that with the challenges facing the federal budget, the leaders of the Department of Defense and of DAU have called on all of us to look for ways to reduce costs while maintaining value. As with most publications, two of the largest costs of publishing *Defense AT&L* are printing and postage. And so, after much consideration and collaboration, we begin our transition to being a largely online entity. This issue of *Defense AT&L* will be one of the last to be printed and mailed to our full roster of U.S.-based subscribers.

As unfamiliar as this change might be to some readers, it does bring new opportunities. We will soon provide a version of the magazine for e-reader devices, along with a smartphone application via the DAU web portal. Not to mention the full-color PDFs always available on our website. A quick e-mail to datlonline@dau.mil will get you automatic updates when new issues come out. And as an incentive to share your knowledge, contributing authors will still receive the few printed and bound copies.

Change sometimes takes getting used to. It's the earnest hope of everyone who works on this magazine that this change will allow us to bring you acquisition knowledge even more efficiently and conveniently.

Thanks to all our readers for your continued support and contributions—and your service to this great nation.

John Bell
Managing Editor



Knowing and Loving Your KO

A Guide for Program Managers

Part 2: Getting to Yes

John Krieger



Part 1 (*Defense AT&L* November-December 2011) outlined the challenges for DoD program managers (PMs) in working with contracting officers (KOs). It noted that the statement of guiding principles for the Federal Acquisition System gives acquisition teams the authority to make innovative and sound acquisition decisions unless specifically prohibited by law or the Federal Acquisition Regulation (FAR). How do you, as the PM, get your KO to say “yes”?

Read What They Read: The Program Manager One-Year FAR Reading Program


Read one part of the Federal Acquisition Regulation (FAR) per week. In addition, look at the referenced solicitation provisions and contract clauses (FAR Part 52) and any associated forms (FAR Part 53). Also look at how the FAR is

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supplemented and implemented in the *Defense Federal Acquisition Regulation Supplement* (DFARS) and *Procedures, Guidance, and Information* (PGI). You can skip the appendix, unless you're really interested in cost accounting standards. Take a look at the index, to familiarize yourself with the three-column layout, in case you ever need to find something in the FAR.

That may seem to be a lot of reading, and it is. After all, the FAR is 2,007 pages, and the DFARS and is 1,237 pages. (The PGI is "only" 483 pages.) Both documents dwarf some of the great works of literature. Newton's *Mathematical Principles of Natural Philosophy* is 372 pages. *Moby-Dick* is 450 pages. Even *War and Peace* is a paltry 950 pages. There are 48 active parts of the FAR—meaning at one part per week, you can read them all in less than a year and still take a vacation.

PMs who might not be such enthusiastic readers can take the SAD approach to reading FAR parts and subparts—reading the Scope, Applicability, and Definitions. If you take this lesser road, be sure to read FAR Subpart 1.1—Purpose, Authority, Issuance—including all of section 1.102, "Statement of guiding principles for the Federal Acquisition System."



The contracting officer gets guidance and oversight from all sorts of places—including the three branches of the federal government.

Turnabout is fair play, however. All contracting officers doing systems acquisition should read DoD Directive 5000.01, *The Defense Acquisition System* (10 pages), DoD Instruction 5000.02, *Operation of the Defense Acquisition System* (80 pages), and the *Defense Acquisition Guidebook* (952 pages). After all, these documents contain the DoD Implementation of FAR 34.003(a), the implementation of OMB Circular A-109, *Major System Acquisitions*. That would be 1,042 pages to implement one sentence in the FAR.

Of course, the problem with reading the FAR and the DFARS/PGI is that they are like the shifting sands of the desert.

Understand Your KO's Environment

Recognize that your contracting officer operates in a complex and ever-changing environment. Although the FAR might

be the central focus of the contracting officer's role, it is only the tip of the iceberg. The contracting officer gets guidance and oversight from all sorts of places—including the three branches of the federal government.

The Legislative Branch

Yes, Congress has the power of the purse strings, but it also affects acquisition in other ways. It does so directly by passing legislation. For instance, the annual National Defense Authorization Act usually lays out the panoply of acquisition reform legislation in Title VIII, Acquisition Matters. Between fiscal years 1994 and 2011, Title VIII averaged 36 sections per year. And then there are specific pieces of legislation, like Public Law 103-355, the "Federal Acquisition Streamlining Act of 1994," which contained 203 sections.

Congress also affects acquisition indirectly, through program oversight and through the GAO. GAO reviews programs and processes and is the keeper list of federal programs and operations it deems at high risk for waste, fraud, abuse, and mismanagement or high risk of needing broad-based transformation. DoD Weapon System Acquisition and DoD Contract Management happen to be two items on the list. Unfortunately, the list is like the Black Flag Roach Motel, where "Roaches check in, but they don't check out!" In this case, you get on, and you never get off. In addition, GAO affects contracting through its authority to hear protests.

The Executive Branch

In the executive branch, we begin at the top, with the president of the United States. The president may issue executive orders that have an impact on acquisition (e.g., Executive Order 13494—*Economy in Government Contracting, Nondisplacement of Qualified Workers Under Service Contracts, and Notification of Employee Rights Under Federal Labor Laws*).

The Administrative Procedure Act (Public Law 79-404, 60 Stat. 237, enacted June 11, 1946) is the federal law that governs the way administrative agencies of the federal government may propose and establish regulations. The APA is the authority behind the FAR and the DFARS. But it is also the authority behind issuances of other departments and agencies (e.g., the Department of Labor, Small Business Administration, Office of Federal Contract Compliance Programs, GSA), which the contracting officer must follow, even if they are not incorporated into the FAR. Worse, some may argue, it also sets up a process for the federal courts to directly review agency decisions.

The OMB, and its acquisition arm, the Office of Federal Procurement Policy (OFPP), establish all sorts of requirements, and provide all sorts of guidance. The requirements and guidance come in the form of OMB Circulars (e.g., OMB Circular A-11 *Preparation, Submission and Execution of the Budget*, OMB Circular A-76, *Performance of Commercial Activities*, and OMB Circular No. A-109 *Major System Acquisitions*) and OFPP policy letters and memoranda.

The executive branch also has administrative forums for hearing contractor claims under the Contract Disputes Act (41 U.S.C. §§ 7101-7109). For those of us in the Department of Defense, that would be the Armed Services Board of Contract Appeals (ASBCA). The majority of matters on the ASBCA's docket involve appeals by contractors from government contracting officers' final decisions or failures to issue decisions. Contracting officers need to keep up with ASBCA decisions so that they will understand the limits of their authority.

The Judicial Branch

The Administrative Procedures Act gives the federal courts the authority to directly review agency decisions. What does that mean to the contracting officer? It means that they have to keep up with decisions of Court of Federal Claims, District Court, Court of Appeals, and U.S. Supreme Court. For instance, the Court of Federal Claims, in addition to the comptroller general, can hear protest cases. In addition, that same court can hear contractor claims cases. If your acquisition is personally involved, it can be quite traumatic. In a worst-case example, the A-12 Avenger II acquisition has been in almost continuous litigation since the Secretary of Defense canceled the program on January 7, 1991, for breach of contract.

Invite Your KO to the Party

No, this suggestion is not about partying, although that might not be a bad suggestion, either. At DAU, we joke about there being only two schoolhouse answers to any acquisition question, either "It depends" or "Up front and early on." Well, the PM needs to get the KO involved in the acquisition up front and early on. I'd suggest that point is when the requirement first arrives and before pen is put to paper on any documentation.

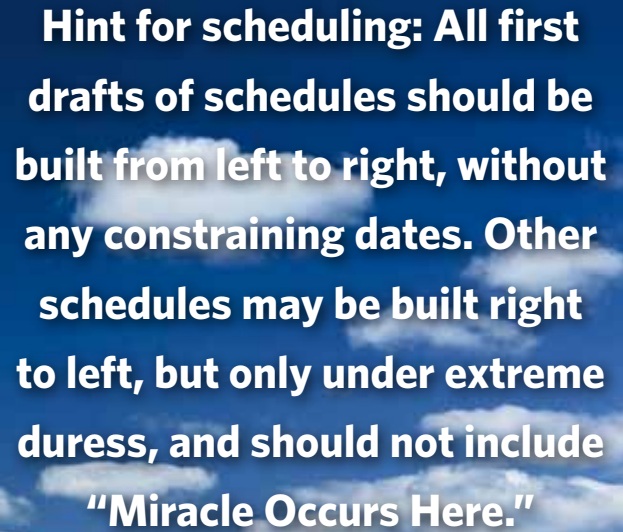
Tie Yourself at the Hip; You're Tied Together Anyway

On what I consider one of the most successful programs I ever worked, the Medium Launch Vehicle (MLV), part of the DoD Space Launch Recovery Program, designed to help recover access to space after the *Challenger* accident, there was only one office between the program manager and me, his chief of staff. Whenever the PM went TDY, his first question was, "Should I have orders cut for you?" (This was in the good old days before DTS.)

Make a date and mark it on the calendar

The program manager, the contracting officer, and other key members of the acquisition team should meet regularly and often. The FAR discusses the team at 1.102-3 Acquisition Team:

The purpose of defining the Federal Acquisition Team (Team) in the Guiding Principles is to ensure that participants in the System are identified beginning with the customer and ending with the contractor of the product or service. **By identifying the team members in this manner, teamwork, unity of purpose, and open communication among the members of the Team in sharing the vision and achieving the goal of the System are encouraged.** Individual team members will participate in the



Hint for scheduling: All first drafts of schedules should be built from left to right, without any constraining dates. Other schedules may be built right to left, but only under extreme duress, and should not include "Miracle Occurs Here."

acquisition process at the appropriate time. (Emphasis added) (2005, 1.1-2)

How regularly and how often depends on the individual requirements of the program. At the extreme end of the "meeting scale" was the MLV, where we had a daily "stand-up" in the PM's office and a weekly "sit-down" status meeting with extended staff.

Establish an SOP

Acquisition is a paper-driven process, whether we like it or not. My dad used to say, "When the weight of the paper equals the weight of the ship, it's time to launch." Dad was an optimist. The PM and the KO should establish a standard operating procedure (SOP) that addresses what constitutes a *complete* acquisition package to kick-off a contract action. In addition, it should address all the items in a contract file that require program office input (requirements document, new start validation, market research, acquisition plan, organizational conflict of interest, A&AS determination/decision document (DDD), make-or-buy decisions, etc.). One other thing the SOP might contain is a set of "normal" timelines for various kinds of contract actions.

Negotiate a contract

Although the SOP has that set of normal timelines, each contract action is unique. On large-dollar or critical actions, I recommend the PM and KO negotiate a contract that identifies each piece of documentation required for the contract file; identifies the final approval authority, if any; assigns responsibility for its development and coordination; and states a date by which it will be provided to the KO. A contract file requires a *lot* of documentation; the PM and the program office have a key role in much of that documentation.

PMs and KOs must work together; it's an imperative. (Hint for scheduling: All first drafts of schedules should be built from left to right, without any constraining dates. Other schedules may be built right to left, but only under extreme duress, and should not include "Miracle Occurs Here.") The contract should be signed by both the PM and KO, and then the work effort should be managed to the contract.

This can be a very effective tool. On one program in which the PM and I had a contract, the first time a milestone was missed, I called the O-6 PM and told him he was in breach of contract. Five minutes later, I had a call from a very anxious major asking me to never, ever do that again. I told him that if he never missed another delivery, I wouldn't have to. He never did. What goes along with this contract is the knowledge that when a program manager and a contracting officer keep their promises to one another, it makes for a much more efficient and effective organization and a happier relationship.

Beware day-for-day slips

This is a pet peeve of mine. I don't know how many times I've heard, upon delivery of an acquisition package that may

have been in development in the program office for a year or more, that failure to meet the "current" schedule would constitute a day-for-day slip. An important document languishing in the program manager's in-box awaiting signature for 2 weeks while he goes salmon fishing in Alaska, hunting in Saskatchewan, skiing in Aspen, or sailing in Bermuda does not constitute a day-for-day slip on my part. Remember the contract? Remember about keeping promises?

Will all these things help the program manager know and love the contracting officer? Perhaps not, but they are critical first steps in an acquisition version of what Cold War psychologist Charles Osgood called "Graduated Reciprocation in Tension-Reduction."

So all you PMs, just grit your teeth and do it. And all you KOs, you do the same.

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Developing a Continuous Improvement System

Scott S. Haraburda ■ Lara E. Zilafro

No one should disagree that continuous improvement is critical to an organization's success, since conducting business using a status quo philosophy will not work. Advocates for successful change methodologies generally tout their particular improvement program as the "silver bullet" process to solve all problems. So how does one know which improvement program to implement? And, how does one avoid falling into the "flavor of the month" trap of changing their processes every time they discover a flaw in the process?

At Crane Army Ammunition Activity (CAAA), we took a different approach by implementing a systematic fully-integrated Continuous Improvement System (CIS) instead of just one or a few non-linked processes. This CIS is a system of the following six parts, all interwoven throughout the organization: organizational process standardization, employee participation, employee development, continuous improvement process, improvement programs, and organizational improvement analyses.

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CAAA employee working on the 30mm projectile recovery production line.

Organizational Process Standardization

Many companies demanded that their customers standardize their organizational processes. There have been several studies conducted that demonstrated that certified organizations using quality standards produce better products or services than non-certified ones. Advantages for implementing one of these processes include: better operational efficiency, increased customer satisfaction, improved employee morale, increased productivity and reduced waste. Problems with this involve the continual costs of maintaining the processes and the lack of linking the product quality to process quality.

There are several organizational process standards available. But the most popular one is ISO 9001, which is the internationally recognized series of standards for an effective quality conformance system, with over a million certified organizations worldwide. Other variations include QS-9000 for the automotive industry, TL-9000 for the telecommunications industry and AS-9000 for the aerospace industry. Periodic third-party certification is used as independent confirmation that the organization meets the requirements of these standards.

Since 1998, ISO-9001 has been used at CAAA. Even though there is a recurring cost to maintain this system, CAAA has seen significant improvements throughout its organization as a result. It has helped reduce process variation, institutionalized a systemic problem resolution, and increased employee participation throughout all of its organizational processes.

Employee Participation

Many times, it is the employees physically working on the line, the ones dealing with problems directly, who have ideas. Thus, employee suggestions can yield some of the best innovations and cost-saving measures. Since the organization can benefit from these suggestions, it is a good idea to share those ben-

efits, such as compensation, with the employee in exchange for those ideas.

Unfortunately, the pitfalls of a hastily implemented, undefined, and ill-conceived employee suggestion program can discourage employees and generate cynicism throughout the organization. Yet, these pitfalls can be avoided. An employee suggestion program that is clearly constructed has organizational commitment, and continual communication can positively improve the bottom-line, along with employee motivation.

The employee suggestion program at CAAA uses the Army Suggestion Program. This program institutionalizes a process for submitting ideas, which are then evaluated for implementation, usually by one of the organization's engineers. Then, this packet is reviewed by the awards board and forwarded to the commander for approval.

If approved, the employee receives cash for tangible benefits (typically about 10 percent of its first year's savings). If the benefits are intangible, the employee would receive either a non-monetary award, such as a jacket, or cash based upon its value of benefit and its extent of application.

There were two recent highly successful examples of significant ideas submitted at CAAA. First, a production machinery mechanic developed a 30mm case extraction tool that eliminated the need for long-term storage of Armor Piercing Incinerating rounds, as well as the cost involved to demilitarize High Explosive Incinerating rounds. The annual cost savings of this effort was more than \$0.6 million. Second, an explosives handler developed a new procedure for filling aircraft flare payload assemblies at a lower angle and with less epoxy, which resulted in less air pockets and a stronger product. This suggestion eliminated a 6 percent rejection rate and CAAA realized more than \$0.5 million in first year savings. These employees were respectively recognized as the Army's Civilian "Suggester of the Year" for 2009 and for 2010.

Employee Development

The mission of an organization begins and ends, including sinks or swims, with its people. These missions cannot be accomplished without solid employee support. So, development of employees is paramount to the success of any continuous improvement effort. CAAA uses individual development plans (IDPs) to ensure that its employees enhance their knowledge, skills and experiences. These improved competencies help them achieve personal and career goals both inside of and external to the organization. Furthermore, the organization benefits by developing improved employee capabilities.

The IDPs must be able to answer three questions for the employees: "Where am I now?" "Where do I want to be?"

and “How will I get there?” Examples of developmental opportunities include: classroom training, distance learning, computer-based training, on-the-job-training, job shadowing, seminars, and developmental assignments. Although simple to do, developing good IDPs is often met with resistance. Excuses include: “I’m developing all the time; why do I need to write it down?” or “I don’t have time to do that” or “That’s just some worthless form HQ makes us fill out,” and on and on. There is definitely some truth to these excuses. There was no substance, little buy-in, and filling out an IDP was really just extra work.

The managers at CAAA use the IDP system within the Army’s Career Acquisition Personnel and Position Management Information System. This system allows the employee to plan, coordinate, and manage their continuing acquisition-based education and training over a 5-year period. It also facilitates the employee’s communication with their supervisor to discuss, plan and gain approval for their development, such as approval to register for a DAU class, as well as other training classes.

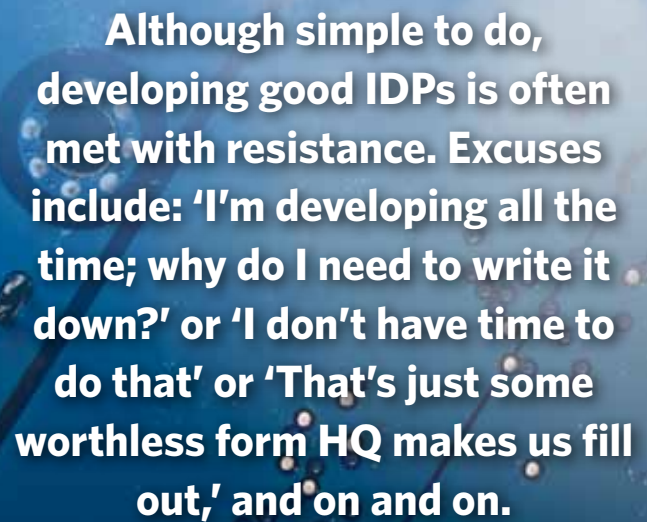
Furthermore, the senior leaders within CAAA recognized that organizational leadership development was a critical factor to the success of this CIS. Instead of just relying upon traditional management techniques, CAAA began to focus upon its leadership capabilities. In addition to using management skills to track progress, real cultural change necessary for sustainment of improvements required using leadership skills to influence its employees to change. Most of its supervisors possessed strong technical skills but lacked critical soft skills necessary for effective leadership. So, CAAA included the development of the soft leadership skills for its supervisors with training in communication, conflict resolution, effective appraisals, coaching, delegation, and mentorship.

Continuous Improvement Process

Many organizations today use some type of continuous improvement process, such as Total Quality Management. Since 2006, along with many other military organizations, CAAA began using Lean Six Sigma (LSS), which is a combination of two different quality programs. Six Sigma, which began in the 1980s with Motorola, involves the elimination of defects. Lean, which developed from Toyota, involves the elimination of waste. LSS uses a variety of tools to map processes, assess customer needs, analyze data and its variation, identify causes, reduce non-value added activities, mistake-proof designs, control processes, and test solutions. Project management of improvements involves the Define-Measure-Analyze-Improve-Control (DMAIC) process.

CAAA has applied continuous improvement processes to all facets of its operations entailing logistics, manufacturing, and administrative processes. As a result, CAAA has enjoyed great reward including more than \$11 million of single-year financial benefits and expounding intangible windfalls. Successes include projects like “CAAA Demilitarization Recycling” and “Optimize Stellar Truck Utilization.”

The demilitarization recycling project took advantage of new policy governing the sale of material generated from ammunition demilitarization operations. CAAA used LSS methodologies to develop a process that leveraged this new policy. As a result, CAAA contracted with a local recycler to purchase its inert scrap material. The proceeds of this contract go to the product manager for demilitarization benefitting both CAAA and other ammunition demilitarization organizations. CAAA took the next step by replicating this process in its logistics storage operations. Not only has this initiative generated more than \$2 million over the last 3 years, but it has also enabled great increases in inventory management efficiencies.



Although simple to do, developing good IDPs is often met with resistance. Excuses include: ‘I’m developing all the time; why do I need to write it down?’ or ‘I don’t have time to do that’ or ‘That’s just some worthless form HQ makes us fill out,’ and on and on.

The Stellar truck project enabled more than \$1.1 million in benefits. Various factors caused less than optimal return on investment involving equipment purchases. The goal of the initiative was to refine capabilities and restrictions of Stellar trucks along with optimizing truck utilization in the performance of the CAAA Depot Operations Directorate. The improvements enabled CAAA capability of controlling its own forklifts allowing the immediate flexibility to reprioritize workload and decreased the quantity of forklift rentals. This flexibility included transporting forklifts to the garage for dead batteries rather than its transportation crews waiting hours for battery change-out by the host base support personnel. Furthermore, since the Stellar trucks carry dock plates as standard equipment, dock plates did not need to be pre-staged at high dock magazines. In addition, a multitude of safety improvements were made to the trucks.

Improvement Programs

The use of improvement programs for improving one or more operational areas is important to a successful CIS. CAAA used two such programs, the Voluntary Protection Program (VPP) and Value Engineering (VE).

Voluntary Protection Program

VPP is a program typically used by U.S. manufacturers to improve their safety culture. This program promotes effective worksite-based safety and health. In the VPP, management, labor, and Occupational Safety and Health Administration (OSHA) establish cooperative relationships at workplaces that have implemented a comprehensive safety and health management system. Approval into VPP is OSHA's official recognition of the outstanding efforts of employers and employees who have achieved exemplary occupational safety and health. After several years of extensive improvement efforts and after follow-up inspections by OSHA, on July 8, 2010, CAAA earned Star Status designation in the VPP Program, making it the second organization in the Army Materiel Command to earn this distinction. Furthermore, using these safety improvements, CAAA passed a historic safety milestone of more than 3 million hours worked without a lost workday incident, dating back to June 11, 2009.

Value Engineering

VE, another example of a regular improvement tool, is an engineering process typically conducted in eight phases: orientation, information, functional analysis, creative, evaluation, development, presentation, and implementation. Although the greatest potential for cost control when applying VE exists in the research and development stage of a new capability, opportunities for the application of VE techniques exist in every stage, especially when considering new available technologies and the experience of actual system deployment and user feedback. There are times when a problem in reliability or maintenance may become the greatest opportunity.

As described in the January-February 2011 issue of *Defense AT&L*, CAAA recently used VE principles with great success in a cooperative joint redevelopment with the Naval Surface Warfare Center, Crane Division. This VE effort turned unusable inventory of decoy flares into good material, supporting the warfighter, saving dollars, and easing the environmental impact of manufacturing new flares. The results were so significant that it yielded a total cost savings of about \$7.8 million while meeting the warfighter's needs, earning the Department of Defense VE Achievement Award for 2008.

Another example of using the VE process involved the production of the M54 burster tube, which is used as a component in a 155mm smoke projectile. The M54 burster tube has a history of being difficult to produce. The initial challenge was to adapt the prototype equipment to the facilities at CAAA, which received the primary pieces of equipment such as the kettle. However, the equipment was not modular and was intertwined with all their other processes. Therefore, CAAA had to develop all the electrical controls, hot water controls, and finishing equipment to produce these items. Furthermore, during the installation and control design process, alternate pouring methods were developed. After more than 2 years of trials, CAAA optimized the system resulting in a less than 1 percent reject rate. Previous reject rates were

from 17 percent to more than 50 percent, allowing CAAA to provide a better quality smoke projectile.

Improvement Analyses

Two different organizational analysis efforts were employed at CAAA to assess its overall improvement performance. These were the Shingo Model and the Baldrige Program.

Shingo Model. This model is based upon the lean management approach taught by Dr. Shigeo Shingo. The principles involved in this approach involve four dimensions of an organization: cultural enablers, continuous process improvement, enterprise alignment, and results. The Shingo Prize for Operational Excellence is a guidebook that describes this model fully and provides an assessment guideline for each of these four dimensions. CAAA used this model in 2007 to assess its pyrotechnic manufacturing operations and in 2009 to assess its logistical shipping operations. In both assessments, CAAA received valuable improvement ideas that it used to improve itself.

Baldrige Program. This is a program designed to raise awareness of performance excellence and recognize national role models by honoring them with the only Presidential Award for performance excellence. The National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department, administers this program and educates leaders about the practices of best-in-class organizations. They provide organizational assessment tools and criteria such as the Baldrige Criteria for Performance Excellence, an easy-to-use questionnaire and performance measurement tool. The CAAA Manufacturing and Engineering Directorate conducted an organizational assessment using this tool to improve its critical business capabilities. Results of this improvement within that directorate allowed CAAA to obtain its fiscal year 2009 Net Operating Result of \$21.2 million, which was 4.3 percent above the plan.

The real benefits from using these improvement analyses is not the obtainment of the award, but the improvements to the organization as it improves itself during the assessments.

Continuous Improvement System

The continuous improvement process and tools are complementary, not mutually exclusive. These processes collectively focus upon results, use a team approach, require management by fact, focus on customers and markets, and require strong leadership for long-term effectiveness. At CAAA, the successes speak for themselves. Although not perfect and having many opportunities for improvements, CAAA has achieved significant benefits through its CIS. Anyone can achieve similar results if they too implement an effective systematic fully-integrated CIS throughout their organization.

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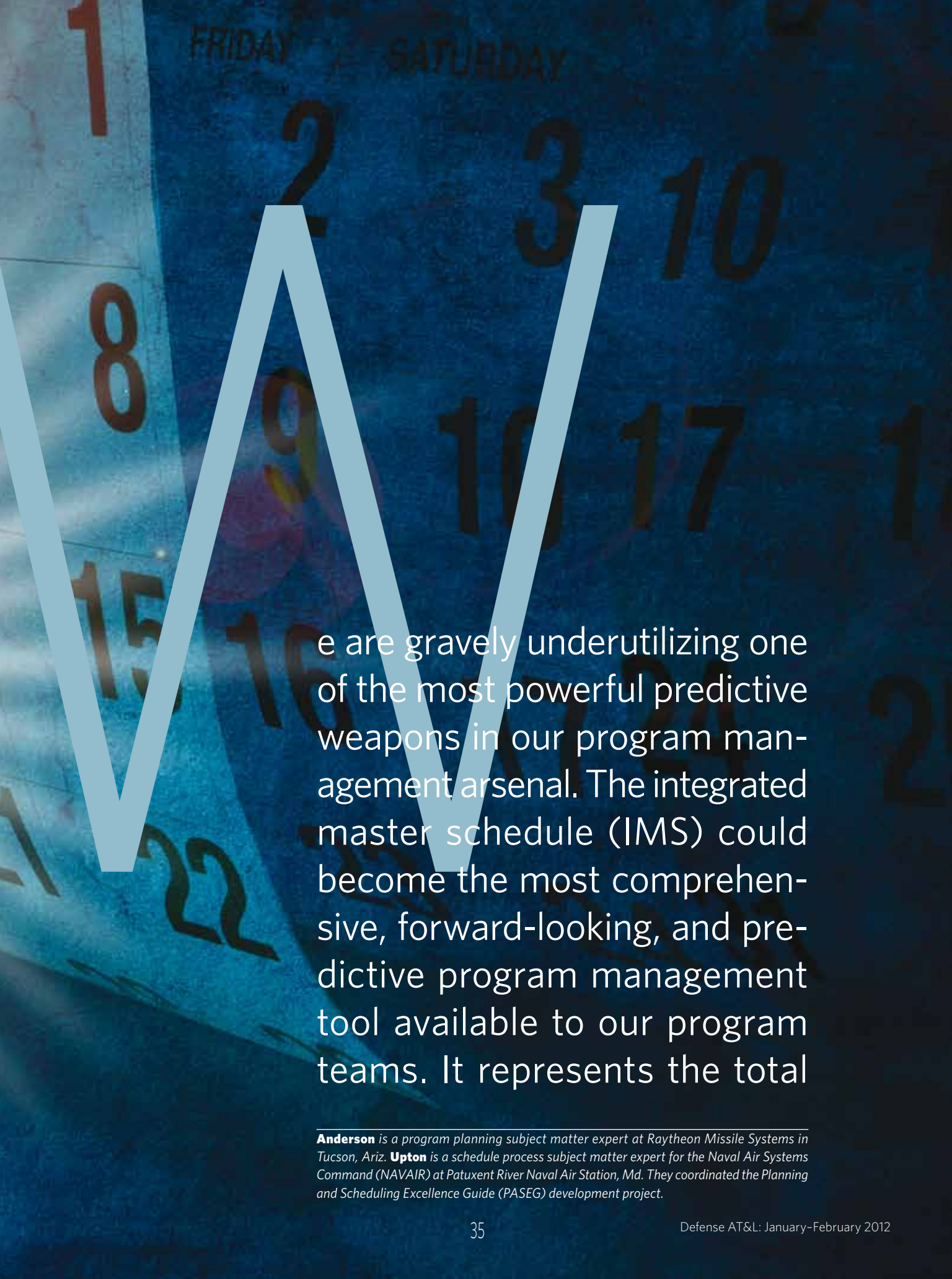
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Unleashing the Predictive Power of the Integrated Master Schedule

The Planning and Scheduling
Excellence Guide (PASEG)

Joshua Anderson ■ Jeff Upton



W e are gravely underutilizing one of the most powerful predictive weapons in our program management arsenal. The integrated master schedule (IMS) could become the most comprehensive, forward-looking, and predictive program management tool available to our program teams. It represents the total

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program roadmap for successful execution and is a key part of a program’s management systems. Yet an IMS can only work when it is developed, maintained, and used effectively by the program team as a management decision tool instead of just as a report or deliverable.

But wait. We have earned value management (EVM), a method of managing programs with earned value processes. Do we need an IMS? Yes! After all, the IMS is the foundation of EVM. Certainly, EVM lets us accurately measure our performance and use analysis of past trends to predict future impacts. But to fully utilize EVM, there must be a sound earned value management system (EVMS) in place—i.e., internal management control systems that meet guidelines, ensuring that accurate information can be produced based on an IMS. So if we have an inaccurate and ineffective IMS, then our earned value data and decisions based on this data are also likely to be inaccurate and ineffective.

The IMS is underutilized for a variety of reasons. To a person unfamiliar with the process of schedule building and execution, an IMS can appear as a large and extremely complex network that can tend to confuse and frustrate program stakeholders more than aid them. To further complicate the situation, there are myths and inconsistent business processes throughout industry and government pertaining to the building and use of an IMS. Often, the program leadership teams treat the IMS only as a “reporting” vehicle and do not realize its true value as a predictive management tool. Additionally, there is a colossal gap in available resources skilled in the management and use of the IMS. All these factors drive the underutilization of the IMS, which plays a large part in the plague of program cost overruns and late deliveries.

Let’s Do Something About It! The PPSS

The Industrial Committee on Program Management (ICPM) comprises program management leaders from both industry and government, as part of the National Defense Industrial Association (NDIA). In 2009, ICPM addressed underutilization of the IMS by chartering the Program Planning & Scheduling Subcommittee (PPSS). The PPSS initially created

the generally accepted scheduling principles (GASP), eight tenets for building, maintaining, and using schedules as effective management tools, to serve as the governance mechanism for the PPSS. Then using the GASP as a foundation, the PPSS enlisted the advice of 57 government and industry program planning subject matter experts to jointly develop the Planning and Scheduling Excellence Guide (PASEG).

Where Do We Start? The GASP

In the spirit of the generally accepted accounting principles, the PPSS opted to develop the GASP to serve as the governance mechanism for all PPSS products. The GASP is concise and easily understood, yet sets high expectations for program management teams to develop and use schedules. The first five GASP tenets describe the requisite qualities of a valid schedule; that is, one that provides complete, reasonable, and credible information based on realistic logic, durations, and dates. The latter three GASP tenets reflect increased scheduling maturity that yields an effective schedule. An effective schedule provides timely and reliable data, aligns time-phased resources, and is built and maintained using controlled and repeatable processes.

But How? The PASEG

Based on the foundational tenets established in the GASP, the PPSS utilized subject matter expertise from both industry and government entities and created the Planning and Scheduling Excellence Guide (PASEG). The PASEG provides the program management team, including new and experienced master planner/schedulers, with practical approaches for building, using, and maintaining an IMS. It also identifies knowledge, awareness, and processes that enable the user to achieve reasonable consistency and a proactive approach to program

Figure 1. Predictive Power—GASP Valid

Generally Accepted Scheduling Principles (GASP)			GASP Narrative
Valid	1	Complete	Schedules represent all authorized effort for the entire contract, with essential subcontracted or other external work or milestones integrated yet distinguishable from internal work. Level of Effort may be excluded from the IMS.
	2	Traceable	Schedules reflect realistic and meaningful network logic that horizontally and vertically integrates the likely sequence for program execution. Schedules are coded to relate tasks or milestones to source or dependent documents, tools, and responsible organizations.
	3	Transparent	Schedules provide full disclosure of program status and forecast and include documented ground rules, assumptions, and methods for building and maintaining schedules. Documentation includes steps for analyzing the critical paths, incorporating risks and opportunities, and generating schedule health and performance metrics.
	4	Statused	Schedules reflect consistent and regular updates of completed work, interim progress, achievable remaining durations relative to the status date, and accurately maintained logic relationships.
	5	Predictive	Schedules accurately forecast the most likely completion dates and impacts to the program baseline plan through valid network logic and achievable task durations from the status date through program completion.

planning, scheduling, and analysis.

Through the use of the concepts within the PASEG, program teams can start to realize the overwhelming benefit of using the IMS as a predictive management tool. The PASEG helps to decode and simplify the complexity of the IMS and offers recommendations for consistent business processes. It demonstrates how the IMS is much more than a “reporting” vehicle and gives realistic examples of how sound management decisions can be made through its use.

Wait—I’m a Manager, Not a Scheduler!

It’s big. The PASEG is currently 194 pages. However, it is set up in a manner that facilitates an ease of use for all program stakeholders, from the program manager through the planner/scheduler. The guide is structured so that it can be read in its entirety or used as a reference document for targeted topics. There are chapters in the guide dedicated specifically to program management. Additionally, all chapters include an introductory “manager’s view,” which summarizes the chapter’s content as it relates to program management.

To promote ease of use, each chapter was constructed using the same format and includes the following content: manager’s view, description, examples, calculations, optional techniques, things to promote, things to avoid, and related topics. The table of contents is also hyperlinked to the chapters below to promote quick navigation between the various chapters.

OK, What’s in This Thing Really?

The PASEG is made up of 61 separate chapters, including the appendices, which are grouped into the following 13 sections.

1. **Purpose & Scope:** Summarizes the overall guide content, layout, background, and recommendations for use.
2. **GASP:** Introduces the GASP tenets, describes its background, and provides recommendations for use.

Figure 2. Predictive Power—GASP Effective

Generally Accepted Scheduling Principles (GASP)			GASP Narrative
Effective	6	Usable	Schedules produce meaningful metrics for timely and effective communication and tracking and improving performance, mitigating issues and risks, and capturing opportunities. Schedules are robust and functional to help stakeholders manage different levels, groupings, or areas as needed. Schedules are developed and maintained at a size, level, and complexity such that they are timely and enable effective decision-making.
	7	Resourced	Resources align with the schedule baseline and forecast to enable stakeholders to view and assess the time-phased labor and other costs required to achieve project baseline and forecast targets. Each program is unique and uses varying techniques to load, baseline, and maintain the time-phased resources at levels that are practical and produce meaningful and accurate projects. When resource-loaded schedules are used they enable flexible updates to resource requirements as conditions change. Whether or not resource-loaded schedules are used, cost and schedule data are integrated for internal and external reporting.
	8	Controlled	Schedules are baselined and maintained using a rigorous, stable, repeatable, and documented process. Schedule additions, deletions, and updates conform to this process and result in valid and accurate results for sound schedule configuration control and maintenance.

3. **Leadership, Buy-in, & Commitment:** Covers managing using the IMS, the IMS as a tool (vice just a report), integration of management tools, and IMS related roles and responsibilities of program personnel.
4. **Schedule Architecture:** Includes IMS architecture (i.e. Work Breakdown Structure and Integrated Master Plan), schedule hierarchy (summary master, intermediate, and detailed), and top down vs. bottom up planning.
5. **Schedule Modeling Techniques:** Contains chapters on task naming, duration, relationships, lead/lag, constraints, milestones, summary lines and hammocks, level of effort, apportioned effort, and working calendars. Additionally, gives an overview of the schedule calculation algorithm and schedule margin.
6. **Cost & Schedule Integration:** Covers content on resource and non-resource loaded schedules.
7. **External Schedule Integration:** Includes integration of subproject and external schedules in addition to interface handoff milestones and schedule visibility tasks (SVTs).
8. **Horizontal & Vertical Traceability:** Contains content on horizontal and vertical traceability and includes a related chapter on task coding.
9. **Schedule Maintenance:** Includes status to “time now,” forecasting, estimates at complete, baseline change maintenance, and rolling wave planning.

10. **Schedule Analysis:** Contains content on critical/driving path analysis, schedule health, incorporation of risk and opportunities, schedule risk assessments, Critical Path Length Index (CPLI), Schedule Performance Index (SPI), Baseline Execution Index (BEI), Current Execution Index (CEI), duration vs. scope based percent complete, and schedule rate charts.
11. **Business Rhythm & Submittal:** Includes IMS supplemental guidance, desktop procedures, submittal of IMS data, business rhythm, and program schedule reviews.
12. **Training:** Covers IMS related training for all program personnel including program managers and planning/scheduling professionals.
13. **Program & Contract Phase Considerations:** Describes scheduling in a production environment and considerations for proposal planning efforts.

How Do I Use It?

The PPSS recommends that the PASEG be used as a guide to assist both industry and government program stakeholders in the creation, maintenance, and use of integrated master schedules. We believe that the concepts in the PASEG will help programs realize the true value of the IMS as an invaluable program management tool.

Users of the PASEG can rest assured that it was jointly developed consistent with the IMS Data Item Description (DI-MGMT-81650), the *Earned Value Management Implementation Guide* (EVMIG), and developed to support compliance with the

ANSI/EIA-748b Guidelines. The Defense Contract Management Agency (DCMA) was an integral part of the PASEG's content review board. Additionally, the PASEG was reviewed by the project lead developing the GAO's 10 scheduling best practices.

Where Do I Get It?

The PASEG is available as a free download on the ICPM website: <http://www.ndia.org/Divisions/IndustrialWorkingGroups/IndustrialCommitteeForProgramManagement/Pages/default.aspx>

Hey, I Have Something to Add!

Great! The PPSS' objective is to continue to evolve the PASEG over the next year and is accepting content related change requests from the general public. The process for submitting change requests is also resident on the ICPM website referenced above.

Unleashing the Power

The PPSS is extremely happy to offer this jointly developed tool for use across the industry and government ranks. We believe that by unleashing the predictive power of the integrated master schedule, through the concepts outlined in the PASEG, programs will have a better chance of meeting their cost and schedule objectives. The positive impact of effectively using the IMS will undoubtedly improve the performance and execution of acquisition programs in direct support of the Better Buying Power Initiative.

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Look at It as a Game

Wayne Turk



Everyone uses sports analogies at times. FedEx even ran a series of commercials poking fun at football analogies in business. This article takes the analogy process a step or two farther (admittedly farther into the absurd at times), and takes a somewhat lighthearted look at how project management is like a number of sports. Some are pretty obvious (like relating the PM to a quarterback) and some are a stretch. While this isn't a serious comparison, there are grains of truth scattered throughout.

Team Sports

Let's kick it off (to start the clichés early) with football, now arguably our national sport. As with all of the team sports, the most obvious analogy is that project personnel have to function as a team. Everyone must play their position to the best of their ability to get the job done. If anyone drops the ball, it is a setback; although it can be recoverable (all puns are intended, by the way). While every team member plays a role, the PM is the quarterback of the project team, calling the plays and directing the players.

The goal of the game is to score and win. A good game plan makes scoring easy. There are a number of parts to the game plan for your project—the project management plan, the quality assurance plan, the configuration management plan, the schedule, and many more. But the ball takes a lot of strange bounces, so you need a risk management plan for contingencies.

Turk is an independent management consultant. He is a retired Air Force lieutenant colonel and defense contractor. He has supported information technology projects, policy development and strategic planning projects for DoD, other federal agencies, and non-profit organizations. He is a frequent contributor to Defense AT&L.

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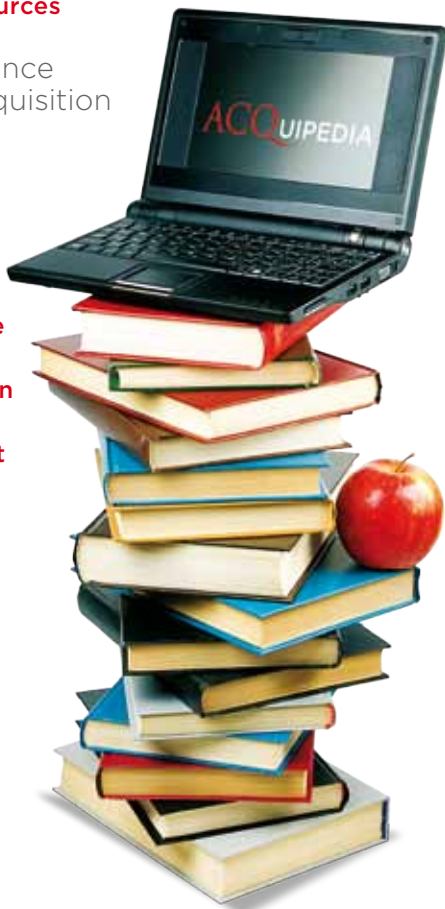
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During the game, there will be mistakes. We'll call these penalties. Some are major and some are minor. A few will be overlooked or declined. The goal of the team is to minimize the penalties, especially the major ones. Good coaching and careful execution by all team members keeps the penalties down and can lead to a score (a deliverable or milestone). Scoring enough wins the game. Good scouting of the opponents (we'll cover the opponents later) and knowing the rules of the game are critical. But even without penalties, sometimes you have to drop back and punt when things don't go right—starting over with a revised game plan.

Another team sport where the analogies fit is baseball. If you don't know what you are doing or you aren't careful, you can easily strike out, especially when someone throws you a curve ball. Some of the common curve balls are changes in requirement, decreased resources, or revised schedules. Once in a while you can knock one over the wall. Good processes can help you get those homers. But you can drop an easy fly ball or commit an error if you aren't careful. Monitoring the schedule and doing earned value management can help you get the easy outs and ensure that all of the bases are covered. Multiple base hits (meeting suspenses) or even bunts (good decisions) can put you in the winner's circle.

Let's look at basketball now. There are people who will be blocking your shots (intentionally or unintentionally). Some of them may even be people on your own team. Good communication with contracting and legal, among others, can help prevent those blocked shots. As a PM, you aren't going to get many free throws, even when you are fouled, so take advantage when you can. You have to pick up the pace and drive for the basket as time is running out. Try to do your work and maintain the schedule so that you don't have to make that three-pointer at the buzzer.

I could go on and on, but that's enough on team sports. You can make any team sport fit as an analogy to project management. I deliberately left out hockey and lacrosse because any time that you give people sticks and require pads to protect them, you are in trouble. And in project management, you normally don't have pads and others have all of the sticks.

Individual Sports

Let's turn now to some of the individual sports and see how the analogies fit. We can start with boxing. Someone is always pounding on you and if you are not careful you can end up knocked out or down for the count. Keeping your gloves up by being aware of everything going on in the project will protect you. Having good people in your corner also helps. By the end of the fight, you are going to be battered and bruised, but winning, especially if it's a knock out, makes you forget all of the pain. It is the same with a project.

Going to a more gentle sport, how about golf? We can start with the clubs. They are your tools. You have different clubs for different shots—and as a PM you have many different tools

There are people who will be blocking your shots (intentionally or unintentionally). Some of them may even be people on your own team.



available. These include EVMS, a requirements management system, risk management, project schedules, etc. Golf is a game of consistency, the same swing over and over. With your project, consistency comes through good processes. But like in golf, sometimes there is that unusual circumstance where you have to change your swing, pick a different club or adjust your stance. Making your processes flexible and tailorable is analogous.

Even the best golfers in the world hit bad shots and get in trouble at times. When that happens, they try to hit the right recovery shot. Sometimes that is just a chip back into the fairway and it might even be back towards the tee. Sometimes it is the spectacular shot through a small opening that ends up on the green. PMs have to do that, too. If you end up in the woods (some type of problem), usually the best play is to get back to the middle (a revised schedule) and move on from there. On rare occasions there may be a way to hit that spectacular recovery shot, but look at the risk/reward ratio. If it fails, you may really be in the hazard then. That knowledge of when to try each comes with experience. It is also helpful to take the advice of your caddie (your team members). Just because you hit a good shot once, it doesn't mean that you will do it every time. Just try to keep advancing the ball closer to the hole.

How about running? A previous boss said it best when he said to "first worry about finishing, then worry about finishing first." This is especially true when your project is a marathon. Set the right pace and check your progress. Again, EVMS can help. Even when you "hit the wall" you have to keep going. With a project, like with running, a minor problem can turn into a big one if it is not taken care of early. At the other end of the spectrum are the sprints. In these you have to get off to a good start right out of the blocks. Good plans and processes can help. You have to go all out on the short projects to make sure that you hit the tape first. But don't worry about setting records, just finish.

And then there is swimming. The rules and problems are similar to running. For instance, it is easy to make a false start when the starting gun sounds. Comparing swimming and project management directly—you always feel like you are under water and trying to get your breath is tough. A consistent stroke is required (those pesky processes again).

General Sports Analogies

There are many things about project management and sports in general that are very similar. For instance, tension and adrenaline are common to both. You can burn out if you aren't careful. Good coaching is critical. The PM frequently serves as the coach (as well as the quarterback) to his team. It is up to him to make sure that everyone does their jobs and all follow the right game plan. The game plan (all of the plans that you need for a project) has to be right and appropriate.

In both, you have opponents; schedule/cost/quality are your biggest opponents in project management. And they are tough ones. You are always going against the clock, working under a salary cap (funding constraints), and striving for the winning outcome. Experience helps. That includes your own experience and that of your team. You are looking for both the veteran players and the rookies with the skills and the right attitude. You need both to build a winning team.

A loss can devastate you. Whether it is the loss of a team member or the loss of the game, either can damage your record, but neither is the end of the world. You can rebound from either through hard work. Both sports and project management have rules. Breaking the rules can hurt you or keep the team from winning. Losing your temper can get you thrown out of the game.

Conclusion

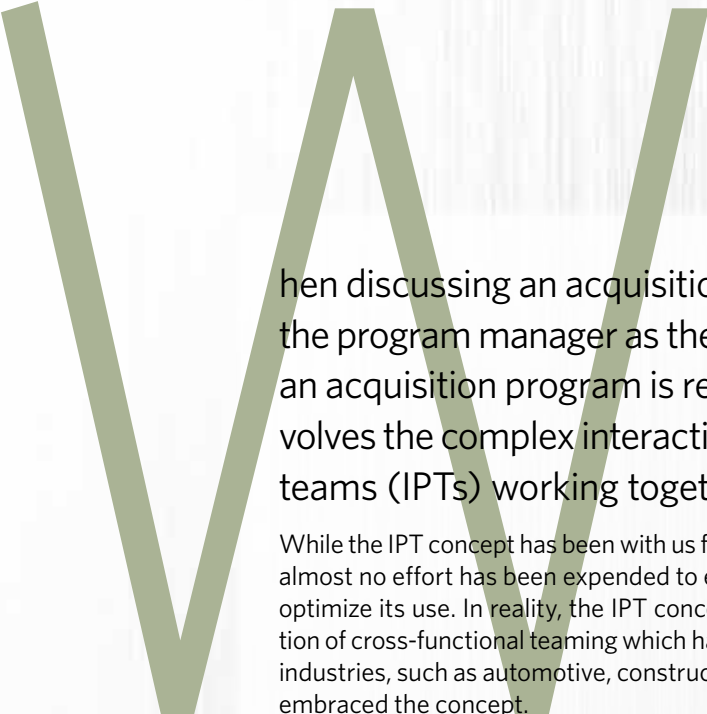
Sports analogies are a common everyday part of our language. They are apropos for project management. While this article took a fairly lighthearted look at the sports comparison and clichés as they apply to project management, hopefully there were some nuggets of truth and good advice hidden within. Think about it: The good coaching, the right game plan, keeping the goal line in sight, the right mix of veterans and rookies, the potential penalties, playing the right shot at the right time, overcoming the inevitable fumble or dropped ball, winning over your opponents—all of those have a place in your job as a PM, just with different words.

Now it is up to you and the team. Go out there and put it between the uprights!

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Building the Program Office Team

Owen Gaden



When discussing an acquisition program, we often focus on the program manager as the key to success. But managing an acquisition program is really a team effort. Often, it involves the complex interaction of many integrated product teams (IPTs) working together.

While the IPT concept has been with us for over two decades, it is my experience that almost no effort has been expended to evaluate the concept or develop the tools to optimize its use. In reality, the IPT concept is nothing more than a tailored application of cross-functional teaming which has been employed in a variety of commercial industries, such as automotive, construction, and pharmaceuticals, well before DoD embraced the concept.

How do you build a collaborative and effective team? Most teams already exist in some form even before their project or program is officially started. A team leader usually does not get the benefit of building his or her team completely from scratch. Of the dozens of teams I have led, only one was a true startup. So a more practical question is how to take the people you are given and turn them into a successful team.

Effective Leadership

Although there are examples of self-directed teams, most teams require leadership. The most important adjustment to make when you become a team leader is to realize that your role has changed from an individual contributor to being responsible for the efforts of a group. You are no longer the one who has to “roll up your sleeves” and do all the work. You have a different role of making sure you have the right mix of talent on your team and that these talented people work together.

One of the worst examples of this “roll up your sleeves” mentality was a missile development program I worked on where my boss’s boss had a Ph.D. in engineering.

Gaden, a professor at DAU, Fort Belvoir, has more than 25 years’ experience as a DAU faculty member. He earned his doctorate in engineering management from the George Washington University.



*peak
performance*

effective leadership

clear direction

*cooperation &
empowerment*

communication

*charter &
ground rules*

skilled team

DAU Offers “Leading Project Teams” Course

As an aid to team building, DAU offers its “Leading Project Teams” course which can be both tailored and conducted on-site for the sponsoring organization. The course focuses on both team building and developing project leaders. Course topics include setting team goals, team problem solving and decision making, conflict resolution, empowerment, and coaching, and leading in an environment of change. The course is a dynamic mixture of seminars and “hands on” team exercises designed to bring out the learning points for each topic.

So far, our biggest customer has been the Naval Air Systems Command where a 3-day version of the course has been offered at their locations around the country. Comments from a recent offering of the course include: “probably the most interesting class I have ever taken, very valuable exercises, wonderful course, wish it were 2 days longer.” For more information about the course, contact the author: owen.gadeken@dau.mil.

We had a capable team, but every briefing to the big boss was a classic exercise in micromanagement. I remember one meeting where this boss even asked to look at the engineering drawings, which ended up taking us way off the topic. This executive was actually a pleasant person who didn’t realize he was playing the wrong role.

Clear Direction

Every team needs a goal that they understand and fully embrace. A key role of the team leader is to provide clear direction and communicate it often.

Team members come with a diversity of backgrounds and experiences. Some are seasoned professionals with years of acquisition experience, but many more are both new to government and new to the acquisition process. Team members also come with diverse goals and objectives—professional, personal, and even hidden agendas, such as protecting their functional discipline or padding their resumé for their next job.

The challenge for the team leader is to get everyone to subordinate their personal agendas to the common goal. Team members can still represent their functional discipline or even pad their resumé, but the team goal must come first. This means team members will be called upon at times (or even frequently) to sacrifice their personal agendas in favor of the team goal. If they are unable to do so, the team leader should replace them with someone who can.

Clear direction is also specific direction, not a lofty or murky vision statement hanging on the wall in the conference room

or commander’s office. The direction must be specific enough, with numbers and costs, so team members have a clear understanding of what it means and what each of them must do to achieve it. Here is an example shared by Terry Little for one of his programs: “To produce and field by [specific date], a cruise missile system providing revolutionary combat capability with an average production price of less than (specific cost) resulting from a successful government/contractor/subcontractor teaming relationship.”

Open Communication

This is the lifeblood of an effective team. Frequent communication is a must using both technology and face-to-face opportunities to share information, accommodate diverse perspectives, deal directly with conflicts and issues, and make timely decisions.

Increasingly, teams are being challenged by both time pressures and geography. Team members are often pulled in many directions, making it hard for them to stay connected. It is rare to find a team member who is not on other teams or special projects. Many acquisition teams are also geographically dispersed and rarely meet in person. While technology can alleviate some of these issues, there is still a need for teams to meet together and form close working relationships. Team leaders should budget and plan for these periodic meetings and visits to field locations.

Frequency of team communication is important, but authenticity of communication is even more important. It does little good to pass information around if you can’t speak freely about it within the team. Building and maintaining an open and trusting environment is one of the most important characteristics of high performing teams. Setting the climate for open and candid communication between team members is another responsibility of the team leader. This starts with the team leader “walking the talk” by being candid and honest in all team interactions. This has a positive and reinforcing effect on the clear direction when it is delivered with openness and candor. It also builds the leader’s credibility.

One team leader I worked for sent a weekly, informal e-mail to everyone on his team. The e-mails came regularly, even when the leader was on extended travel. The purpose was to share current status as well as relay his personal thoughts and feelings about what was going on. Even though he was a strong introvert, this leader also spent a good portion of his office time walking around and having informal chats with team members in their work areas. He not only learned what was going on firsthand, but was also able to influence and motivate team members in this one-on-one environment.

Skilled Team Members

This is crucial to creating a high-performance team. There need to be enough skilled team members to reach critical mass. So the team leader must constantly focus on recruiting, developing, and retaining team members. With baby boomers

retiring and being replaced by younger and less experienced workers, building a high-performing team is becoming more challenging.

In an intermediate acquisition course I taught recently, the average acquisition experience of class members was less than 1 year. One student confessed to me that her total acquisition experience consisted of two IPT meetings she had recently attended. Although these younger workers are talented and highly motivated, they still lack experience working in DoD’s complex acquisition environment. Some of this deficit can be overcome with training, but much of it will simply require more hands-on experience.

In the meantime, both DAU and many DoD organizations have set up acquisition support teams staffed with experienced acquisition professionals to provide real-time support to program teams on almost any aspect of their programs. This support ranges from specific subject matter expertise to coaching the entire team as they work through particular program issues.

Cooperation and Empowerment

It is not enough to have a critical mass of skilled team members; they must also be team players who can work together. Many acquisition professionals are used to doing their own thing and do not adapt well to the team environment. Your team may have the best engineer, logistician, or contract specialist in the command, but their expertise is marginalized if they can’t work well with others.

Equally important is the ability of each team member to speak for their parent organization which includes making real time inputs to team decisions. Team members who are there just to represent their functional discipline and who must check back with their organization on every decision defeat the real purpose of the team. So, as new members are identified to join the team, it is important to verify both their skill set and the empowerment they have from their home organization if you are working in a matrix environment.

When William Perry’s first memo came out (May 10, 1995) on use of IPTs across the defense acquisition enterprise, he clearly recognized that cooperation and empowerment were “the two most important characteristics of IPTs.” In the attachment to his memo, he elaborated on both concepts. “Teams must have full and open discussions with no secrets,” and IPT members “are an extension of their organizations and leadership and they must be able to speak for those organizations and leaders.”

One top Army project manager I interviewed told me his real success was to simply recognize the talent that already existed in the organization when he took over, make them team leaders, and give them freedom to act on behalf of their teams. His role was to make sure his teams had the clear direction, training, and resources they needed to succeed.

Team Charter, Processes, and Ground Rules

Teams work better when they are well organized. The first tool of team organization is a charter. The charter outlines the team’s purpose, membership, resources, deliverables, and accountability relationships. It is usually coordinated and signed by all participating organizations. Organizational leaders and team members may come and go so the written charter is very important to stability of the team over time.

Having a set of common processes is also important for high performing teams. The first process I recommend is a roles and responsibility matrix. This matrix tracks team members on one (usually the vertical) axis against team functions or responsibilities on the other (horizontal) axis. For each area of responsibility (such as test planning or earned value tracking), team members are coded by their role (such as lead, coordinate with, or keep informed). This matrix is very useful to make sure all important functions are covered. It also lets team members know their respective roles for each task area. Other important team processes that need to be spelled out include team communication, decision making, and conflict resolution.

Finally, top performing teams can benefit from establishing ground rules for all team meetings. Common ground rules could include full participation, don’t interrupt, stay on task, and no hidden agendas. The processes and ground rules can be included in the team’s charter, but they can also evolve separately over the life of the team.

Here are examples of ground rules developed by two acquisition teams:

Team One:	Team Two:
Assume noble intent.	Start on time and end on time.
Use the power of questions.	Don’t shoot the messenger.
Really listen.	One speaker at a time.
Stay focused.	Everyone is encouraged to participate.
Build on each other’s questions.	Come prepared.
Respect the perceptions of others.	No long-winded speeches.
Keep responses short (pithy).	Collaborate; strive for win-win.
Draw others into the discussion.	Have fun.

Team Building

Teams don't just happen; they have to be built. Team building is the process of deliberately creating a team from a newly formed or existing group of people. Before a team can be expected to do great work on a project or program, great work has to be done on the team itself. Most of this great work is done by the team leader in guiding the team through the classic forming, storming, norming, and performing stages of team development (the Tuchman Model).

A good way to start team development is to hold a team startup meeting or workshop. An off-site location can be a good way to pull team members away from their daily tasks and focus on organizing the team. The kick-off meeting is the ideal time and place for the team leader to offer clear direction and team goals and challenge the team to provide their feedback and inputs on how the goals will be achieved. This meeting also provides time for team members to really get to know each other both professionally and personally. Work-related sessions in the off-site can be supplemented with team building and social activities. One to three days may be required to do a really good job with the startup meeting.

With a good startup meeting under their belt, most teams assume they are set up for success. But success can be a moving target. Just as outside events continually impact every acquisition program, team dynamics are also subject to continuous change. Thus, every team needs to set aside time for periodic self-assessments of both how their work and their team are doing. While it is established practice to have periodic project or program reviews, it is rare to have periodic reviews of the team itself. But candid self-assessments of the team are

vital to keep it focused on their goals and working at peak performance. One of our industry guest speakers made the following comment: "Once a month, I try to rethink my team. I might pause and say, 'OK, I'm still comfortable.' I may say, 'I think we could do better if we could make this change. We may not be able to do it right now, but here's my plan. We're going to lay it out.' "

All work and no play can make for a dull team. Over time, the pressures of long hours and tight suspenses can hurt team morale. So all teams need to mix in fun events along with work projects. There are always opportunities to reward team members who do good work as well as those meeting milestones on the way to achieving team goals. These events can be turned into celebrations involving the whole team. Teams can also benefit from purely social events such as cookouts, picnics, and sports competitions. Such events help team members relax and get to know each other with the option to include family members at some events.

I am convinced there is something truly magic about a high performing team. Out of hundreds of teams I have been on in my career, I can only point to three or four that were peak performers. So the bar is set very high for any team to reach its peak performance. But top performance is still achievable if you pay attention to the basic principles reviewed in this article and work very hard. With the challenges currently facing defense acquisition programs, top-performing teams may be the only pathway to success.

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Everything is Not a Process

Products, Games and Emerging Metaphors for Work

Lt. Col. Dan Ward, USAF



There are many ways to describe this magazine. A reader might say it is a compilation of news, guidance, and ideas related to defense acquisitions. To an accountant, this is \$2 worth of wood pulp and ink. A physicist might see an assembly of 100 trillion atoms and point out that like all matter, it is mostly empty space. A retro survivalist who still reads the print version probably sees a convenient fire starter, although of course an increasing number of readers only know this as a PDF file, which would be no help at all as kindling.

Ward is a branch chief in the Science, Technology and Engineering Directorate, Office of the Secretary of the Air Force for Acquisition (SAF/AQRT). He holds degrees in systems engineering, electrical engineering, and engineering management. He is Level III certified in SPRDE, Level III in PM, and Level I in T&E and IT.



The point is, the context and needs of our situation will determine which description is most useful and relevant. But regardless of which description you prefer, one thing is for certain: this magazine is not a process.

Now, a magazine could be described as the result of a process, the product which comes out at the end of a sequence of related activities. It could be used in a classroom as a component of a learning process or in a campfire as part of a combustion process. But a magazine itself is not a process. It's a product. This is an important distinction.

I bring this up because it is popular in some circles to say "Everything is a process." However, we've already shown that statement is demonstrably false. Some things, such as this magazine, are not processes.

No doubt the intent of saying "Everything is a process" is to assert that every activity is a process, excluding things like magazines. But even that modified assertion paints with an excessively broad brush. It would perhaps be more accurate to say that every series of actions can be described as a process. I'd be the first to admit such a description is often useful. But let me suggest it is equally important to describe activities in other, non-process frameworks as well.

Sloppy semantics aside, there is a real danger when we describe "everything" as a process, particularly if we think process descriptions are the definitive way to represent a series of related tasks. It is a very short step from "Everything is a process" to "Everything is only a process" or even "The process is everything." Here there be dragons.

Process advocates assert that by focusing on the process we automatically improve the outcome. That may be the case in some instances, but it is by no means a guarantee. I'm not sure it's even likely.

The assertion that “everything is a process” is hugely problematic for several reasons, not least of which is that such a description risks losing focus on the product. Consider this: if everything is a process, then anything that isn't a process is nothing. Products are not processes. Therefore, products are nothing. And while no one would deliberately ignore the product, our mental framework affects our behavior in interesting ways. As I explained in “Metaphors Are Mindfunnels” (November-December 2008), metaphors shape our perception, which drives our thoughts and actions. The *process is everything* description leads to a not-so-subtle pressure to focus on Everything (i.e., process) rather than Nothing (i.e., product). Dysfunction ensues.

Naturally, some might object that the product has a central place in a process description. The entire point of a process is typically to produce something, so the product is simply one part of the process. In fact, some might even argue that a good process is tightly focused on the output. Yes, yes, I'm sure that's true. However, in practice, it's embarrassingly easy to get distracted by various diagrams and process-centric activities, relegating the output to a secondary consideration.

It's a question of focus. Should we put the weight of our attention on the process or the result? Process advocates assert that by focusing on the process we automatically improve the outcome. That may be the case in some instances, but it is by no means a guarantee. For that matter, I'm not sure it's even *likely*. Other people, including this author, argue the *outcome* should be primary, with process a secondary consideration. Of course, this is not a binary choice; we can and should pay attention to both. However, since there is only room for one Most Important Thing, I contend that Thing should be the product, not the process.

As stated earlier, there are actually several flaws with the “everything is a process” concept. Along with derogating the importance of the output, this approach also tends to focus on external, measurable components, while ignoring or downplaying anything that can't be captured in a diagram.

Consider a game of soccer. We could certainly describe it as a process, beginning with the referee's whistle, followed by players in their assigned roles running up and down the field, kicking the ball toward a goal, and ending with the final whistle. We might step back further and include recruiting, training, coaching, and even advertising as part of our soccer process enterprise. But perhaps there are other, better ways to describe this series of related tasks. Perhaps we could describe soccer as... a game.

If we look at soccer as merely a process, we risk missing out on some of its more subjective aspects, the passion and the sweat, the carefree pointlessness of casual sport or the glorious geopolitical significance of hostile nations meeting on a field of friendly strife. The process description can never account for these elements, nor for what psychology professor Mihaly Csikszentmihalyi calls “flow,” the interior experience where a person is fully immersed and playing at the very edge of their skill level. This inability to capture such critical aspects of sport is a significant poverty of the process-centric worldview.

In a similar sense, consider music. We could easily describe a song as a process, a series of musical notes played in sequence to create a pleasing sound. We might step back further and include composition, rehearsal, recording, and marketing as part of our musical process enterprise.

Or we could look at music as something that, like sport, *transcends* process. A player piano can be programmed to produce a sequence of sounds, but it will lack a certain inexplicable element that a human virtuoso brings to the performance. Different musicians playing the same song can produce quite different performances, and the exact same performance by any single musician will produce vastly dissimilar reactions in listeners, depending on the memories associated with a particular tune.

The point is an activity can be described as a process—but that is not the *only* way to describe it. In some cases, it is not the *best* way to describe it. Process descriptions focus on the visible, the tangible, and the obvious. Such an approach has merit but is ill suited to deal with the ephemeral, hidden aspects of life—and in many cases, that's where the interesting stuff happens.

Which brings us (finally!) to defense acquisitions. While we often talk about the acquisition process, this descriptive framework is needlessly and inappropriately limiting. Focusing on process can cause us to overlook critical aspects in acquisition, just as it would in sport or music.

The truth is, when we describe acquisition as a process we are using a metaphor. To once again borrow from “Metaphors Are Mindfunnels,” a metaphor involves describing one thing in terms of something else. It is important to understand that metaphors both reveal and conceal aspects of the thing being described. Mistaking a metaphorical description for a literal one means we remain blind to the concealed aspects. This blindness can lead to all sorts of unproductive actions and decisions.

There are other approaches, other metaphors to consider, when talking about acquisition. We could describe it as a journey, for example. A journey is a series of steps that involve moving from one location or situation to another. Like a process, journeys involve related activities and an objective/destination. Unlike a process, a journey is more organic, more unique, and less predictable. A journey can be mapped, but unlike a process map, a journey’s map only aims to convey part of the story. Such a map portrays topology, not experience—and when you’re on a journey, the experience is just as important as the geography.

One of the more intriguing metaphors for work to emerge in recent years is to describe it as a game. Jane McGonigal is a leading expert on “gamification,” and her outstanding book *Reality Is Broken* explains the benefits of such a metaphor. Explaining the benefits of a game metaphor, McGonigal writes “by removing or limiting the obvious ways of getting to the goal, the rules push players to explore previously uncharted possibility spaces. They unleash creativity and foster strategic thinking.” This is very much in line with the concept that “constraints foster creativity,” which is central to the FIST (Fast, Inexpensive, Simple, Tiny) approach to acquisition. In our current financial environment, such an approach is critical; the defense acquisition community desperately needs both thrift and creativity. A game metaphor not only helps explain how this approach can work but actually helps *make it work* by shifting our perception and helping us understand the benefits of limits.

McGonigal goes on to write that a “game must be carefully designed so that the only way to be rewarded is to participate in good faith—rather than on providing compensation for doing

Some Additional Commentaries on Process

The phrase “everything is a process” isn’t the only problematic truism found within the process-centric community. Let’s take a look at a few others.

A bad process is better than no process.

A bad process is better than no process in the same way that a road heading in the wrong direction is better than no road at all. If all you’re concerned about is a smooth ride and high rate of travel, then any road will do. But if you care about your destination at all, the wrong road is vastly inferior to an unpaved trail that leads to the right place.

The thing is, when a process goes bad, it generally sets up barriers to smart actions, hinders creativity and initiative, and reduces accountability. (Dilbert, anyone?) In other words, bad processes get in the way of good work and set you off in the wrong direction. As I explained in “The Truth About Process Loss Cost” (September-October 2008), the cost of compliance with a bad process may exceed the cost of the negative outcome we’re trying to avoid. An absent process may not offer much help and guidance, but at least it doesn’t get in the way or codify perverse incentives.

If you can’t describe what you are doing as a process, you don’t know what you’re doing.

— W. Edwards Deming

In a certain sense, Deming is correct. An inability to describe our activities probably indicates a lack of a conscious, intellectual understanding of the activity. But just because you don’t “know” what you’re doing doesn’t mean you aren’t good at it. As Donald Schon wrote in *The Reflective Practitioner*, “competent practitioners usually know more than they can say.” The late Col. John Boyd described this type of practical competence as *fingerspitzengefühl* (“fingertip feel”).

With all due respect to the eminent Dr. Deming, it’s entirely possible to be intuitively effective, to have a dependable gut-feel on how to get things done that exceeds one’s descriptive powers. The mechanism may be entirely mysterious to the one doing it, but the mystery does not rule out results. The good doctor is technically correct—understanding what we’re doing allows us to describe it as a process—but describing and knowing are not the point. Doing is. Further, his implication that absent a process description our effort will necessarily be inadequate does not exactly hold water.

A rigorous process is designed to stand up to scrutiny and oversight.

Sadly, processes are often designed in order to C our collective A’s. Some people seem to take comfort in an ability to hold up process compliance as a talisman when performance outcomes are poor. No one can be blamed for bad results when they can honestly assert “I followed the process.” Any unsatisfactory outcomes are obviously the process’ fault, not the person’s.

In truth, a process should be designed to improve our outcomes, not as a CYA mechanism. Standing up to scrutiny and oversight isn’t the point. Delivering meaningful results is.

We can continue to improve our processes indefinitely.

As long as we don’t mind getting smacked in the face by the Law of Diminishing Returns, we can improve our processes indefinitely. Any process with an optimization point can get ever closer to perfection. However, each improvement has both a cost and a benefit. At some point, the next increment of improvement costs more than it delivers.

Once again, the point isn’t to improve our processes but to improve our outcomes. Process improvement is a wonderful thing when the result is increased efficiency and/or better products. Process improvement for its own sake, however, is the very definition of waste.



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something that would otherwise feel boring, trivial or pointless." This is good advice for anyone in the business of creating business processes, and doubly so for the acquisition community.

We don't need to limit ourselves to a single metaphor. In fact, using multiple metaphors can increase our understanding of the world around us and help us make wiser decisions. Therefore, it is neither advisable nor necessary to stop talking about the "acquisition process." The trick is to make sure that is not the only way we describe it. It is equally wise to talk about the acquisition journey, experience or even (gasp!) game.

Conclusion

Everything is not a process. While there are many benefits to using the "acquisition is a process" metaphor, such an approach also has limitations and flaws; it should therefore not be the only way we describe the work we do. Acquisition leaders would be well served to consider complimentary descriptions, to include a gamified approach, when making decisions and taking action.

Ultimately, whether we call it a process, a journey, or a game, acquisition is something we do in order to deliver weapons, systems, and services. Anything which distracts from those deliveries has a negative impact on our performance. The all-too-common belief that everything is a process is just such a distraction.

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To My Readers

After writing nearly 60 articles, comics, and stories for *Defense AT&L* over the past 9 years, I've decided to take a break. Writing these pieces has been tremendously rewarding and educational for me—and a lot of fun. I particularly enjoyed connecting with so many readers, both digitally and in person. But for a variety of reasons, including my imminent deployment, I've shelved any plans to write for this magazine for the foreseeable future.

Now, there is nothing a writer treasures more than a good editor and a forum for publication. Working with the professionals at *Defense AT&L* since 2002 gave me all that and more. I still can't believe how lucky I've been. This magazine has been very good to me, and the decision to stop wasn't an easy one. But it is the right one for now.

I don't plan to stop writing entirely; in fact, I just might end up writing more than ever. I've got a book project or two in the works and hope to publish a few articles in other outlets. I may even do an occasional piece for *AT&L*, but for now, most of my writing efforts will be directed elsewhere.

I wish you all the best; keep fighting the good fight!

—Dan



Illustration by Jim Elmore

The Mice in Council

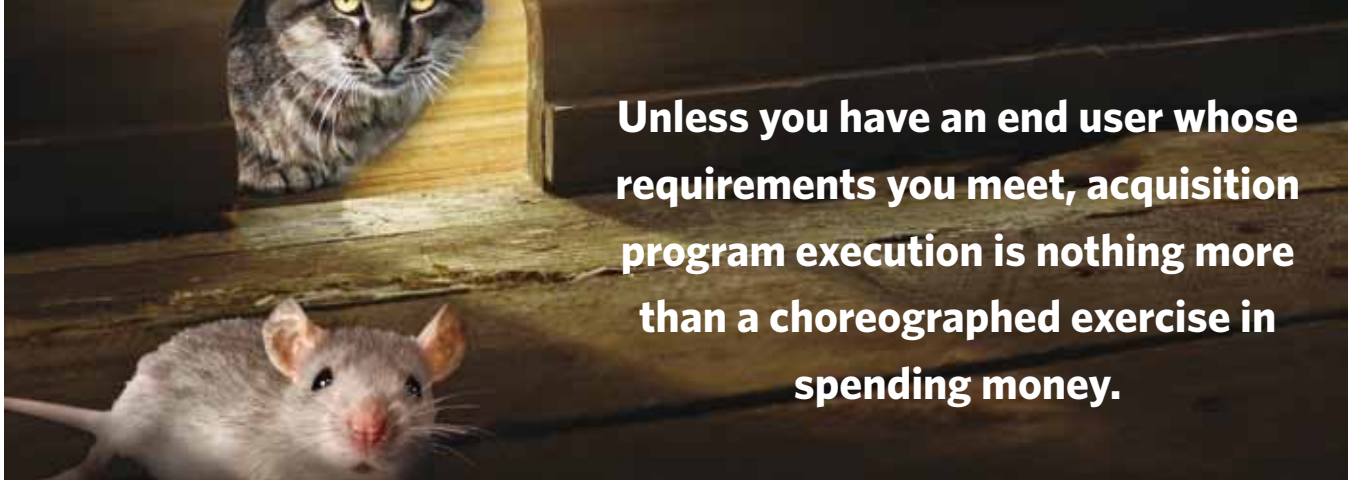
An Acquisition Fable

Edward Todd Urbansky, Ph.D.

Throughout the day, the field mice went about their lives under constant threat from the cat who patrolled their grounds and disrupted their activities. In frustration, the field mice called for a council, to determine the best course of action.

The mayor mouse called the meeting to order and announced the item for discussion. The mice continued pouring in and began to air their thoughts. One of the mice suggested tying a bell to the cat—a suggestion that was generously applauded and cheered by those assembled.

Urbansky is the senior Air Force (tribological) chemist and head of special projects at the Joint Oil Analysis Program Technical Support Center. He works on CBM issues (such as volcanic ash) that affect lubricant quality and engine wear. He is certified in SPRDE/STM, /SE, /PSE, and TST. When he is not in his laboratory, he likes to write stories for his three daughters and sometimes for his coworkers.



Unless you have an end user whose requirements you meet, acquisition program execution is nothing more than a choreographed exercise in spending money.

Just as they thought they had reached a solution, the parliamentarian mouse called for a point of order. The mayor mouse banged the gavel while the attorney mice pored over weighty books of order to determine whether proper procedure had been followed. After a long study, the lead attorney mouse affirmed the point of order and recommended to the mayor that the entire discussion begin again because the quorum had not been made until after the motion to discuss the cat. Subsequently, each of the speakers stood in turn and spoke his piece over. Again, the suggestion to tie a bell to the cat was greeted with cheers and applause. "Do I have a motion to attach a bell to the cat?" asked the chair. "So moved," cried out several mice. "Seconded," called another. "Is there any debate?" asked the mayor.

A field mouse asked the first question: "Who will attach the bell?" The councilor mice were silent at first. Then, the mayor said: "I shall appoint an administrator to commission a study to determine how best to attach the bell." The mice cheered and the meeting was adjourned.

Six months later, the administrator returned to the council. "The engineering firm has exhausted all the funds I have set aside. I require additional funds." The funds were approved and the study resumed. Six months later, the administrator returned with the results of the study: "The engineering firm has concluded that the best way to attach a bell to the cat is for one of the mice to climb up and affix it to the cat's collar."

The field mouse asked: "Who will attach the bell?" The councilor mice were again silent. Then, the logistician said: "I shall develop doctrine and training on the installation of bells on cats." The council cheered and the meeting was adjourned.

Six months later the logistician returned to the council: "My performance-based logistics contractor requires additional funding." The funds were approved. Six months later, the logistician returned: "I have prepared six manuals and four online courses. Three simulators and six instructors stand ready to train our mice on the fastening of bells to cats."

The field mouse asked: "Who will attach the bell?" The councilor mice remained silent. Then, the contracting officer said: "That is a good question, but first we must procure a bell."

The council nodded their approval, and the meeting was adjourned.

The contracting officer submitted a request for proposals, and many fine submissions came in. Some were over the mayor's operating budget, so the contracting officer returned to the council: "We have received many proposals. They vary greatly. I do not know which to select."

At that point, the field mouse asked again: "Who will attach the bell?" The councilor mice were uneasy and began to speak in hushed tones, whereupon the systems engineer spoke: "The problem is that you do not have a well-defined specification. I will write one for you." The mayor mouse said: "That is exactly what we need," and the meeting was adjourned.

Eight months later, the systems engineer returned with 500 pages of documentation that included a specification with key performance parameters, technical drawings, system engineering plan, project plan, quality assurance plan, manufacturing plan, logistics management plan, test and evaluation strategy, and schedule. The mayor spoke: "This is excellent work, but we do not know how much money to allocate for this program."

At that point, the field mouse asked again: "Who will attach the bell?"

"That is a very important question, my good friend," said the chief administrator mouse. "We shall need a program manager to determine the answer to such questions." A program manager was hired. "I need a cost estimate," said the program manager, and so a budget analyst was hired.

In 2 months, the cost estimate was prepared, and the council assembled to approve the funds. The program manager hired a financial manager who prepared the purchase requisition and delivered it to the contracting officer, who, once again, requested proposals. After 10 months, five offers were submitted. The program manager picked two firms to build prototypes and funded them up to milestone B.

The prototypes were built, the critical design review was carried out, and the program manager returned to the council in

the hopes that the milestone decision authority would authorize continuation of the program. "We have constructed two prototypes for consideration," the program manager reported. The chief administrator mouse was very impressed. "Let us move on with the engineering and manufacturing development phase. Given the importance of the product, I believe we should go with both systems," he said and signed the acquisition decision memorandum for milestone C. All of the mice on the council cheered, but the field mouse asked once more: "Who will attach the bell?" This time, the council did not even respond as the project had gained so much momentum and was employing so many of its citizens.

During the next 18 months, developmental testing was carried out and manufacturing facilities were built. A single bell was produced by each contractor. The program manager scheduled the bells for operational testing and evaluation (OT&E)—2 months ahead of schedule and just under budget. The tester took possession. He carefully examined the bells from the low-rate initial production to verify them against the specification. The craftsmanship was outstanding. All the key performance parameters had been exceeded. He examined the logistics support. It was phenomenal; everything from maintenance to training to supply had been covered. There was only one final issue: validation. Obviously, he could not place a bell on an actual cat, so he carried out extensive modeling and simulation. There was no doubt: Both products would work once installed on an actual cat. The test report was glowing. No project had ever gone so well.

The program manager was thrilled that both bells had passed OT&E. Now, there was a spare in case the first bell was damaged in use. He gleefully reported to the council the good news. A celebration was called for; performance awards were given to all; both contractors received their incentives. Roads were named for the milestone decision authority. No one even heard the field mouse ask: "But who will fasten the bell?"

The council was so impressed with the program's success that it voted to make more bells so they could be sold to other communities of mice. The mouse economy was bustling. What an industry they would sustain. The mayor even suggested: "Perhaps we could sell bells to the chickens for attachment to hawks. We shall expand from ground defensive systems to air defensive systems." Everyone cheered because the mouse industrial base could now compete favorably with the cows' dairy industry and the chickens' egg industry.

The program manager directed that full-rate production begin. The mouse factories churned out bells upon bells, which were delivered to the logistics warehouse awaiting installation or sale. Many mice were trained and readied. Everyone was happy; on top of the high employment and multi-sector growth, the cat problem was finally going to be solved.

The program manager was promoted for completing the project, the systems engineer was rewarded for preparing the vari-

ous specifications and plans, the logistician was rewarded for developing training and doctrine, the contracting officer was rewarded for procuring the material, the contractors were paid for delivering the product, the budget analyst was rewarded for developing the cost estimate, the financial manager was rewarded for staying within the budget and utilizing earned value management, and the test authority was rewarded for validating the product. Victory was declared by the chief administrator mouse. Councilors were re-elected as moneys from the contractors flooded their campaign coffers.

Except that no one would attach the bell to the cat. And so, unfortunately, the mice continued to be harassed by the cat because no user could be found. Attempts to sell bells to the chickens were unsuccessful; the chickens just laughed at the idea of tying bells to hawks. They were, after all, too chicken. Consequently, the bells were declared surplus and given to the cows.

Moral

Contracting, logistics, engineering, budgeting, testing, financial and program management cannot make a product work. Unless you have an end user whose requirements you meet, acquisition program execution is nothing more than a choreographed exercise in spending money. If no one wants the finished product, you might as well be making cowbells.

Lesson for the program manager: If you get the user involved with the integrated product team, you just might make the right product.

Lesson for the user: Don't let the experts dictate what the product will be or how it will be used. Make sure your concerns are heard and acted upon.

Author's note: When first faced with the acquisition wall chart, new DoD employees are overwhelmed with the complexity and immensity of the process. While ACQ 101 and 201 courses begin to unravel the mysteries of the acquisition process and make the wall chart decipherable, the novice needs a dramatically simplified introduction. Today's programs are so large that they take on a life of their own and risk departing from the user's original inception.

Likewise, the resident experts (whose disciplines define the various "swim lanes" on the chart) are routinely removed in time or geography from the program's original inception and have little understanding (as new employees) of how they fit into the process. Although this distance can provide a fresh viewpoint, it can also lead to displacement of the user's requirements with the expert's requirements. Even seasoned experts can begin to think this way—that they know what the user needs. In ancient Rome, a runner followed the emperor's chariot, admonishing: "Remember you are human." In this fable, we see what happens when the program fails to heed the warning to "Remember the user."

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Defense AT&L

Writers' Guidelines in Brief

Purpose

Defense AT&L is a bimonthly magazine published by DAU Press, Defense Acquisition University, for senior military personnel, civilians, defense contractors, and defense industry professionals in program management and the acquisition, technology, and logistics workforce.

Submission Procedures

Submit articles by e-mail to [datl\(at\)dau.mil](mailto:datl(at)dau.mil). Submissions must include each author's name, mailing address, office phone number, e-mail address, and brief biographical statement. Each must also be accompanied by a copyright release.

Receipt of your submission will be acknowledged in five working days. You will be notified of our publication decision in two to three weeks. All decisions are final.

Deadlines

Note: If the magazine fills before the author deadline, submissions are considered for the following issue.

Issue	Author Deadline
January-February	1 October
March-April	1 December
May-June	1 February
July-August	1 April
September-October	1 June
November-December	1 August

Audience

Defense AT&L readers are mainly acquisition professionals serving in career positions covered by the Defense Acquisition Workforce Improvement Act (DAWIA) or industry equivalent.

Style

Defense AT&L prints feature stories focusing on real people and events. The magazine seeks articles that reflect author experiences in and thoughts about acquisition rather than pages of researched information. Articles should discuss the individual's experience with problems and solutions in acquisition, contracting, logistics, or program management, or emerging trends.

The magazine does not print academic papers; fact sheets; technical papers; white papers; or articles with footnotes, endnotes, or references. Manuscripts meeting any of those criteria are more suited to DAU's journal, *Defense Acquisition Research Journal (ARJ)*.

Defense AT&L does not reprint from other publications. Please do not submit manuscripts that have appeared elsewhere. Defense AT&L does not publish endorsements of products for sale.

Length

Articles should be 1,500–2,500 words.

Format

Send submissions via e-mail as Microsoft Word attachments.

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